



# ChemiDoc™ Touch Imaging System

Sensitivity in detection, power in quantitation



# ChemiDoc Touch Imaging System

## **Best-in-class performance**

Superior to film in signal-to-noise ratio

**Equal to film in sensitivity and resolution**

High-quality imaging of gels and western blots

## **Highly intuitive Image Lab Touch Software**

Streamlined path from experiment to usable data

**Stain-free enabled**

Publication-quality images at your fingertips

**HIGH-PERFORMANCE  
IMAGING**

**EASY, FLEXIBLE  
INTERACTION**

**STAIN-FREE ENABLED**

**WESTERN BLOTTING  
CONSUMABLES**

### High-Performance Imaging

As sensitive as film, with advanced blot detection technology to determine best exposure for faint and intense bands

### Easy Acquisition Features

Includes image preview, auto-focus, auto-exposure, and additional exposure options

### Convenience in Storing and Sharing Data

Export images via USB or network connection

### Assess Images at the Point of Acquisition

Pinch and zoom images on the 12-inch touch screen; access a range of tools with Image Lab™ Touch Software

### Smart Tray Technology™

Automatically recognizes your application



Chemiluminescent blots, stain-free gels/ blots, and ethidium bromide, SYPRO Ruby, and other stains.

Coomassie Blue, silver, and other stains.

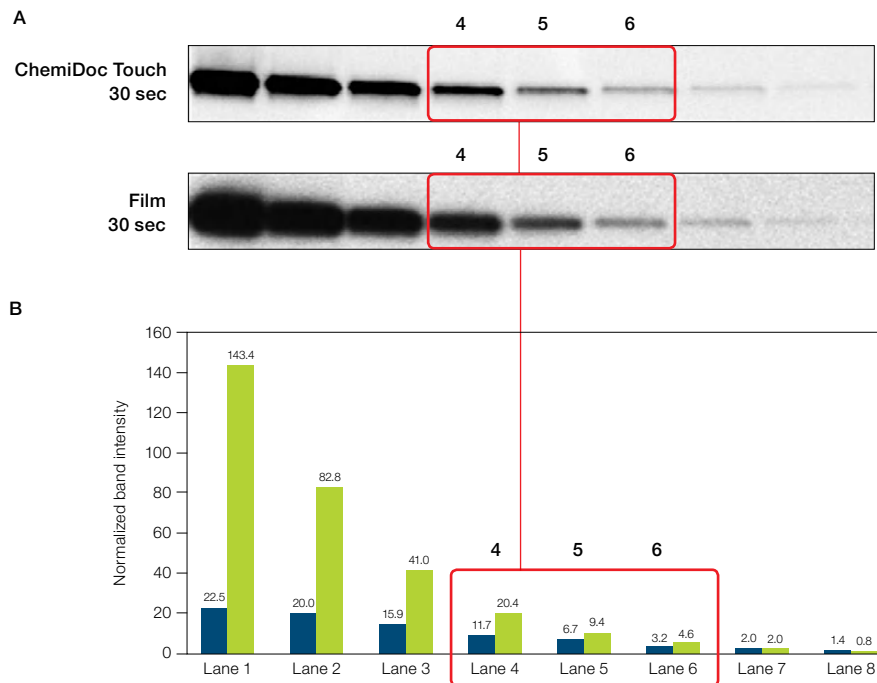
GelGreen or any SYBR® Stains.

# HIGH-PERFORMANCE IMAGING

Get the sensitivity of film without the hassles of film processing, darkroom chemicals, or associated mishaps. Combine this sensitivity with a suite of tools to optimize imaging and quantitation, and achieve an unmatched ability to resolve the faintest and most intense bands into meaningful data.

The ChemiDoc Touch Imaging System is comparable to film ...

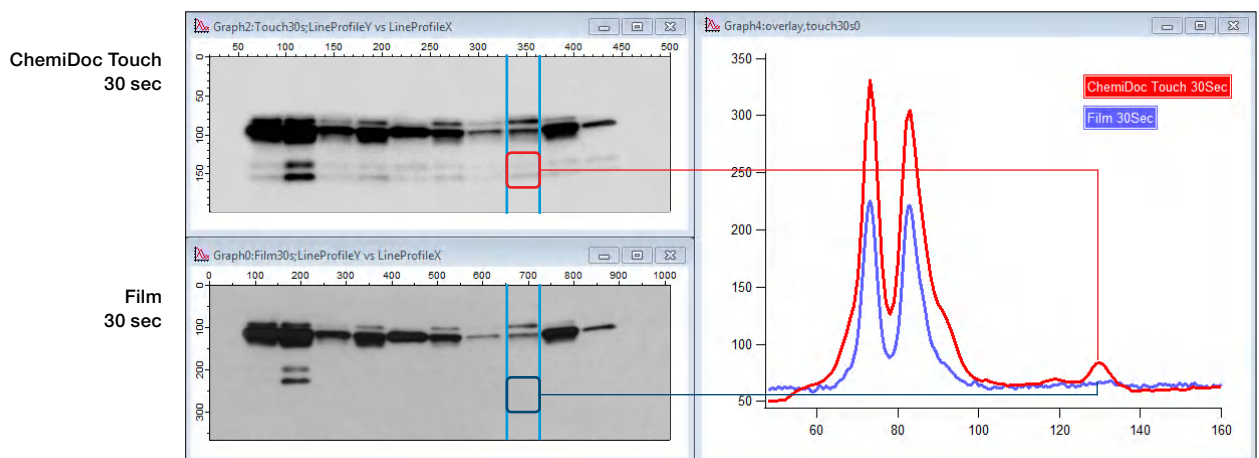
Detect low signal at the same exposure time



**Fig. 1. Comparison of sensitivity between the ChemiDoc Touch Imaging System and film.** **A**, Western blot analysis of LacI expression was conducted using 2x serial dilutions (starting at 0.31  $\mu$ g protein) of *E. coli* cell lysate. The membranes were either imaged on the ChemiDoc Touch Imaging System for 30 sec or exposed to film for 30 sec. **B**, The normalized band densities illustrate the ability of the ChemiDoc Touch Imaging System to detect low signal bands at the same exposure time as film. ChemiDoc Touch Imaging System, 30 sec (■); film, 30 sec (■).

... and in many cases the ChemiDoc Touch Imaging System is superior to film.

Reveal faint protein bands missed by film.



**Fig. 2. Side-by-side comparison between the ChemiDoc Touch Imaging System and film at the University of California, San Francisco.** Levels of the three isoforms of the pro-apoptotic protein Bim were measured in various cell lines using western blot analysis. The membranes were either imaged on the ChemiDoc Touch Imaging System for 30 sec or exposed to film for 30 sec to compare detection sensitivities. As shown by the overlay graph, the ChemiDoc Touch Imaging System was better able to detect faint protein bands than film.

HIGH-PERFORMANCE  
IMAGING

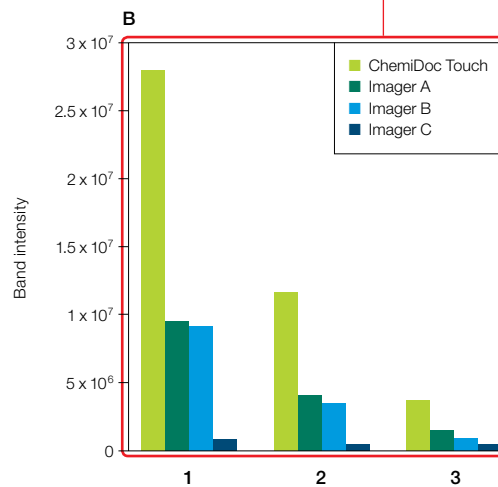
EASY, FLEXIBLE  
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## Best-in-Class Digital Image Quality

Comparison of the ChemiDoc Touch Imaging System with other digital imagers



**Fig. 3. Comparison between the ChemiDoc Touch Imaging System and other digital imagers.** **A**, Western blot analysis for p44/42 MAPK (Erk1/2) expression was conducted using 2X serial dilutions (starting at 10 µg protein) of Jurkat cell lysate. The membranes were imaged on either the ChemiDoc Touch Imaging System or digital imagers from other vendors for a 15 sec exposure. As shown, the ChemiDoc Touch Imaging System is able to produce images with better definition and differentiation between closely spaced bands. **B**, The graph demonstrates the ability of the ChemiDoc Touch Imaging System to detect the same faint bands with greater intensity.



# EASY, FLEXIBLE INTERACTION

Image Lab Touch Software takes the guesswork out of imaging and puts publication-quality images at your fingertips in seconds. Acquire images with a rapid 3-step workflow. Engage a full complement of digital tools to assess, select, and export your images.

## An Intuitive Acquisition Workflow

Acquiring images is simple and fast.

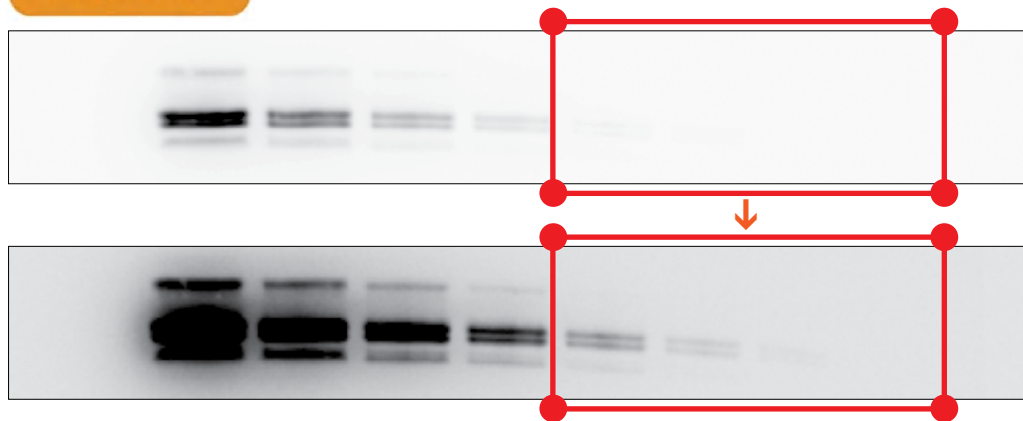
Easy workflow: Define image size (touch-pinch to zoom) → Select gel or western blot application → Set exposure controls → Acquire image



## Optimize Exposure for Analysis and Target Key Bands

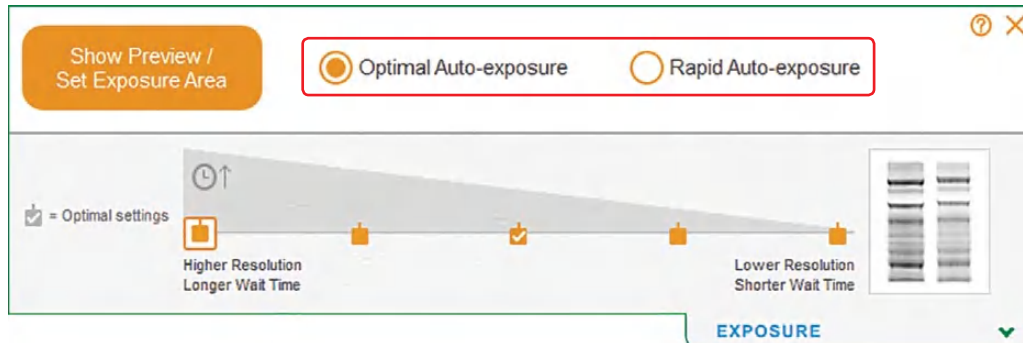
Define auto-exposure region for the optimal measurement of your bands of interest.

1 Show Preview / Set Exposure Area



Previewing the image lets you highlight an area of interest on a blot image to acquire the clearest signal from that area.

2 Show Preview / Set Exposure Area



Choose the exposure depending on your need for either fast qualitative analysis (Rapid Auto-exposure) or in-depth quantitative analysis (Optimal Auto-exposure) of the blot.

HIGH PERFORMANCE  
IMAGING

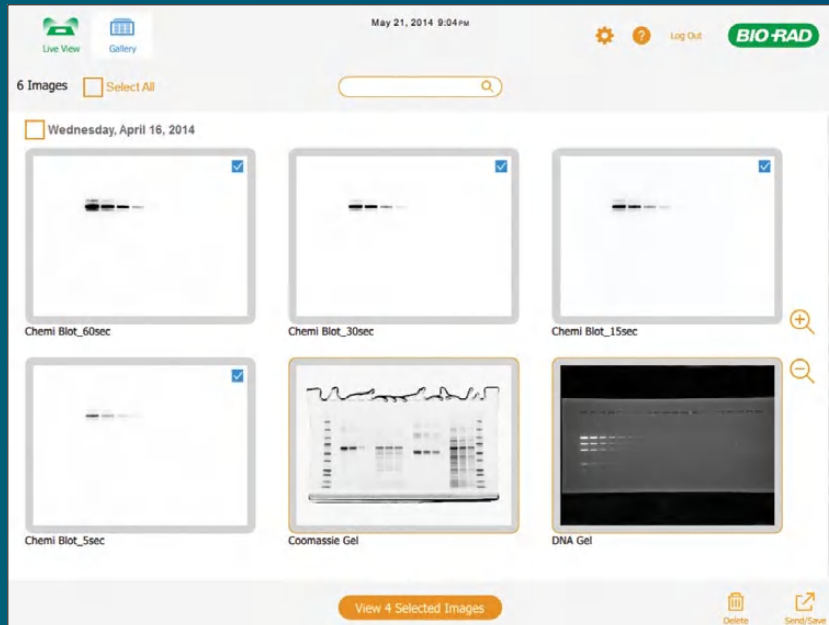
EASY, FLEXIBLE  
INTERACTION

STAIN-FREE ENABLED

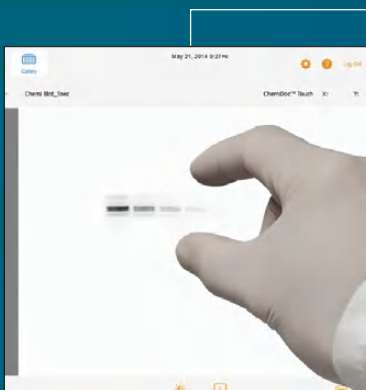
WESTERN BLOTTING  
CONSUMABLES

## Assess and Export Images in the Gallery

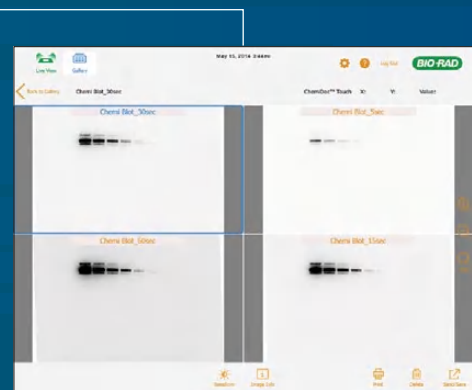
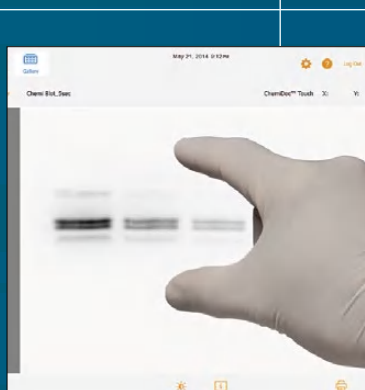
The ChemiDoc Touch Imaging System has an intuitive interface to make reviewing, selecting, and exporting your images efficient and straightforward.



Gallery view enables you to peruse raw images



Pinch and zoom for a closer look



Compare up to 4 exposures side by side



Export and print via USB  
or Ethernet connection



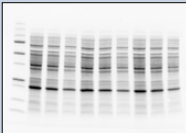


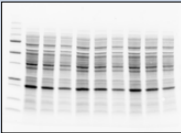

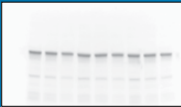
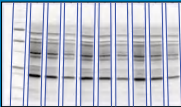


# STAIN-FREE ENABLED

The ChemiDoc Touch Imaging System fully supports Bio-Rad's unique stain-free gel technology. Using the ChemiDoc Touch Imaging System as part of the V3 Western Workflow brings a new level of quality control and quantitation to the western blotting process, allowing multiple points at which to visualize, verify, and validate results.

## V3 Western Workflow™

The V3 Western Workflow streamlines the western blotting protocol, incorporating stain-free in-gel chemistry to allow rapid fluorescent detection of proteins for gels and blots as well as the use of total protein normalization as a loading control. This improved workflow saves time and increases accuracy and reliability throughout the western blotting process.

Workflow		Benefit
<b>1</b> <b>Separate Proteins</b> 		<b>Run gels in as little as 15 min</b> <ul style="list-style-type: none"><li>Speed with flexibility: TGX Stain-Free™ Gel chemistry available in precast and handcast formats</li></ul>
<b>2</b> <b>Visualize Protein Separation</b>   Stain-free image of pretransferred gel		<b>Visualize separation for all lanes in 1 min</b> <ul style="list-style-type: none"><li>Coomassie-like performance with no background variability and no staining/destaining</li></ul>
<b>3</b> <b>Transfer</b> 		<b>Efficient and uniform protein transfer in 3 min</b> <ul style="list-style-type: none"><li>Throughput: transfer 4 mini gels at once</li></ul>
<b>4</b> <b>Verify Transfer Efficiency</b>   Stain-free image of blot		<b>Quickly assess transfer efficiency</b> <ul style="list-style-type: none"><li>Verify quality of transfer for all lanes in 2 min</li></ul>
<b>Antibody Incubation and Blot Detection ~5 hr</b>		
<b>5</b> <b>Validate Western Blot Data by Normalization and Analysis</b>   Detect protein of interest  Normalize protein of interest with stain-free image of blot from step 4		<b>Use stain-free blot image as total protein loading control</b> <ul style="list-style-type: none"><li>No need to strip and reprobe</li><li>Use the entire protein sample in one lane (no need to rely on housekeeping proteins)</li><li>Reliable and accurate quantitation</li></ul>



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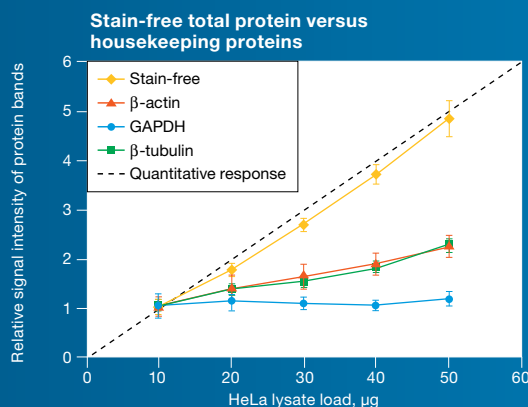
WESTERN BLOTTING  
CONSUMABLES

## Total Protein Normalization

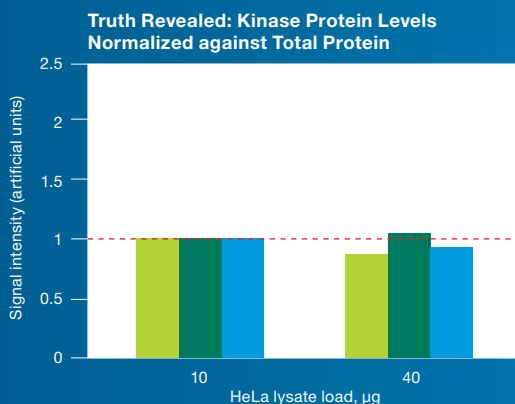
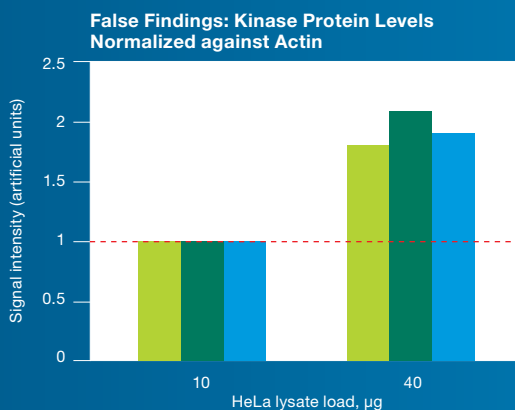
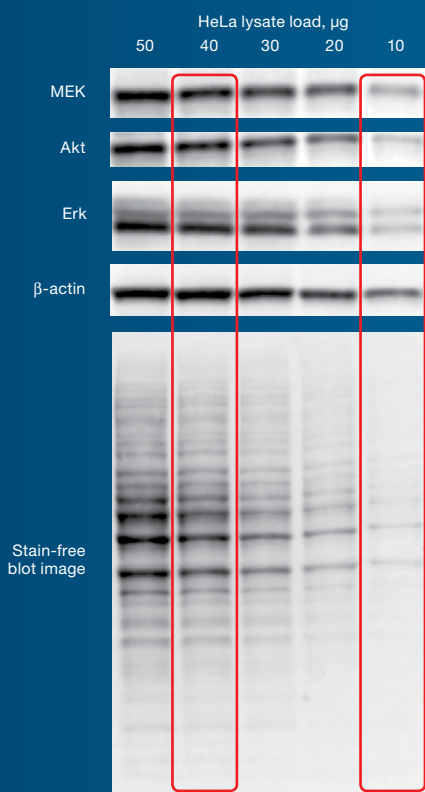
Stain-free gel chemistry makes it possible to use total protein levels as a loading control rather than the housekeeping proteins used in traditional western blotting protocols. This negates the need to strip and reprobe the blot and avoids the attendant errors that can be introduced in this step.

Using total protein normalization produces a much greater linear dynamic range for measuring target protein levels. Housekeeping proteins such as  $\beta$ -actin,  $\beta$ -tubulin, or GAPDH are often very abundant in biological samples, which results in their signal being oversaturated compared to target proteins. Normalizing results to a total protein measurement corrects this problem, allowing a meaningful comparison even with low-abundance targets, and leads to far greater quantitative accuracy in measuring proteins of interest.

### 1 MORE RELIABLE to quantitate the protein load



### 2 AVOID FALSE FINDINGS caused by housekeeping protein signal saturation



# WESTERN BLOTTING CONSUMABLES

The ChemiDoc Touch Imaging System is part of Bio-Rad's range of products to improve the entire western blot process, from immunoprecipitation all the way through to data analysis. These consumables provide workflow optimizations and better results for a variety of laboratory needs.

**NEW**

## Immunoprecipitation with SureBeads™ Magnetic Beads

For protein complex pull-down and isolation of low-abundance targets

- Faster and easier way to immunoprecipitate — say yes to magnetization, no to centrifugation
- Patented surface chemistry enables proper antibody orientation, which maximizes antigen binding capacity
- Ergonomically designed 16-tube SureBeads Magnetic Rack has strong separable magnets to minimize sample handling and is fast, easy to use, and affordable.



**NEW**

## Protein Gel Electrophoresis with TGX Stain-Free Chemistry

Superior gel performance that eliminates the need for staining

Optimized for western blotting, long shelf-life TGX Stain-Free Gels accelerate electrophoresis, imaging, and analysis.

- Available in Mini-PROTEAN® Precast Gel, Criterion™ Precast Gel, and FastCast™ Acrylamide Solution formats
- Run gels in as little as 15 min
- Quickly visualize proteins — no staining required
- Efficient protein transfers in as little as 3 min
- Compatible with standard sample and running buffers



## Prepacked Transfer Consumables

All the resources needed for an efficient transfer process

- Ready-to-use transfer packs eliminate extra membranes, filter paper, and buffer preparation. Setup time is reduced to 1 min from the opening of the gel cassette to the start of the transfer
- Ready-to-assemble transfer kits provide all consumables to transfer 40 blots, including transfer buffer, transfer stacks, and the option to select nitrocellulose, PVDF, or LF-PVDF membranes

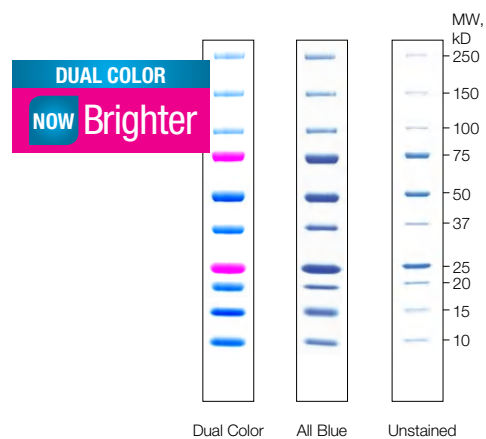


**NEW**

## Precision Plus Protein™ Standards

Designed for accurate molecular weight estimation

- Precision Plus Protein Dual Color Standards — now brighter for easier target protein identification and can yield stronger band intensity after blot processing
- Precision Plus Protein Unstained Standards — for stain-free visualization



## Clarity™ Western ECL Substrate

Expect more from your chemiluminescent substrate

The perfect choice for detecting high- and low-expressing proteins, even when making multiple exposures.

- Excellent sensitivity
- Low background
- Long signal duration
- 2-year shelf life at room temperature



## Specifications

### Automation Capabilities

Smart Tray Technology	ChemiDoc Touch Imaging System automatically recognizes your application-specific tray and adjusts imaging parameters and software options accordingly
Autofocus	Precalibrated focus for any zoom setting or sample height
Auto-exposure	— 2 user-defined modes (rapid or optimal auto-exposure) for chemiluminescence — 2 user-defined modes (faint or intense bands) for nonchemiluminescence applications
Image flat fielding	Dynamic; precalibrated and optimized for every application

### Hardware Specifications

Touch screen functionality	Multitouch capable (4 points) 12.1" display
Maximum image area (L x W)	16.8 x 21 cm
Illumination source	Trans-UV, 302 nm (standard) Epi-white (standard) Trans-white (optional) Trans-blue (optional)
Detector	Cooled CCD, 6 megapixels
Camera cooling temperature	-25°C
Filter holder	2 positions (1 for standard filter, 1 without filter for chemiluminescence)
Emission filter	Standard filter to perform protein and DNA gel and blot imaging
Dynamic range	>4 orders of magnitude
Data output	16-bit or 8-bit; SCN, TIFF, JPEG image files
Instrument weight	35 kg (78 lbs)
Instrument size (L x W x H)	61 x 51 x 53 cm
Operating voltage	100–250 V
Operating temperature	10–28°C
Operating humidity	10–85% relative humidity (noncondensing)

## Ordering Information

Catalog #	Description
170-8370	<b>ChemiDoc Touch Imaging System</b> , includes internal computer, 12" touch-screen display, camera, Image Lab Touch Software, chemi/UV/stain-free sample tray, Clarity Western ECL Substrate, Precision Plus Protein Dual Color Standards
170-8381	<b>ChemiDoc Touch V3 Western Workflow for Mini Gels</b> , includes ChemiDoc Touch Imaging System with Image Lab Touch Software, chemi/UV/stain-free sample tray, 50 Mini-PROTEAN® TGX Any kD Stain-Free™ Precast Gels, SDS-PAGE accessories, Clarity Western ECL Substrate, Precision Plus Protein Dual Color Standards, Mini-PROTEAN Tetra Cell, Trans-Blot® Turbo™ Transfer Starter System, 50 PVDF transfer packs for mini gels
170-8382	<b>ChemiDoc Touch V3 Western Workflow for Midi Gels</b> , includes ChemiDoc Touch Imaging System with Image Lab Touch Software, chemi/UV/stain-free sample tray, 50 4–20% Criterion TGX Stain-Free Precast Gels, SDS-PAGE accessories, Clarity Western ECL Substrate, Precision Plus Protein Dual Color Standards, Criterion Cell, Trans-Blot Turbo Transfer Starter System, 50 PVDF transfer packs for midi gels

### Accessories

170-8372	<b>White sample tray</b> , for gels stained with Coomassie Blue, copper, silver, or zinc stains
170-8373	<b>Blue sample tray</b> , with viewing goggles, for gels stained with GelGreen or any SYBR® Stains
170-8374	<b>Chemi/UV/stain-free sample tray</b> , for chemiluminescent blots, stain-free gels/blots, and gels stained with ethidium bromide, SYPRO Ruby, Oriole™, GelRed, and SYBR® Stains.
170-8375	<b>UV safety shield</b> , to protect against UV light exposure during band excision
170-8376	<b>Gel alignment templates</b> , for consistent placement of gels and blots
170-8377	<b>Holder for sample trays and UV shield</b>
170-8378	<b>ChemiDoc Touch IQ/OQ protocols</b> , for installation qualification/operational qualification
170-8097	<b>Standard 302 nm UV lamps</b> , pkg of 6
170-8089	<b>Mitsubishi Thermal Printer</b>
170-7581	<b>Mitsubishi Thermal Printer Paper</b> , 4 rolls

### Software

170-9690	<b>Image Lab Software</b> , stand-alone version, PC or Mac, for viewing images and 1-D analysis
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