Amersham Biosciences
Part of GE Healthcare

Ettan DIGE Imager

The Ettan™ DIGE Imager (Fig 1) is a scanning CCD camera designed for applications in the life sciences. In particular, it has been engineered to create high quality images of 2-D DIGE gels. By combining high resolution with precise motion control, the Ettan DIGE Imager produces accurate multichannel images of your Cy™2-, Cy3-, and Cy5-labeled gel. The system has also been designed to image a wide range of other fluorescent gel applications, and can be used with the new ECL Plex™ Western Blotting System.

The imager is controlled from the Ettan DIGE Imager software, and can be set up for a variety of gel formats. Results from the Ettan DIGE Imager are directly compatible with ImageQuant™ TL, ImageMaster™ 2D Platinum, and DeCyder™ 2-D Differential Analysis (DeCyder 2-D) Software.

ImageMaster 2D Platinum v6.0 comes in two flavors: DIGE and non-DIGE. The newly developed DIGE-enabled version of the software comprises powerful and versatile tools for the analysis of images from DIGE experiments. Together with the Ettan DIGE Imager, ImageMaster 2D Platinum v6.0, DeCyder 2-D v6.5, and DeCyder Extended Data Analysis (EDA) Software create a powerful platform of image capture and analysis tools that offers flexibility, versatility, and adaptability for protein profiling.

Fig 1. Ettan DIGE Imager

Ettan DIGE Imager features

- High sensitivity for imaging faint spots
- Software-selectable wavelengths
- Filter bandwidth optimized to minimize crosstalk
- Adjustable exposure level to optimize sensitivity
- Fast scanning for increased throughput
- Full 16 bits/pixel depth for accurate quantitation
- Sealed environment for scanning and protecting wet samples from drying
- Dedicated removable cassettes for handling and scanning gels—cassettes are available for naked gels or membranes and DALT and SE 600 series gel sandwiches
- Compatibility with Ettan Spot Picker
- Flat field calibration
- Compatible with image analysis software, such as ImageMaster, ImageQuant, or DeCyder software for quantitative evaluation of samples
- Two 1-GB/sec Ethernet connections for data transfer

Principle of operation

Upon excitation by the metal halide lamp, light is emitted from a fluorescently labeled sample in proportion to the amount of labeled compound in the sample. Emitted light is collected and converted to an electronic signal in a CCD. The signal is displayed and analyzed. Data is stored in a 16-bit TIFF to provide the digital resolution required to characterize subtle signal intensity differences over the wide dynamic range of the instrument.

Figure 2 shows a typical gel image produced with the Ettan DIGE Imager.

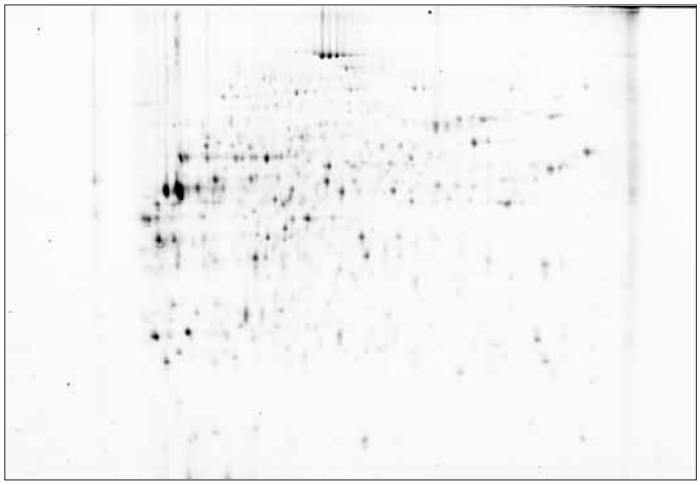

Fig 2. Cy2 image of a 2-D DIGE gel.

Figure 3 compares color images of the same 2-D DIGE gel acquired on the Ettan DIGE Imager and the Typhoon™ scanner. For 2-D DIGE gels, the two instruments produce images of similar quality.

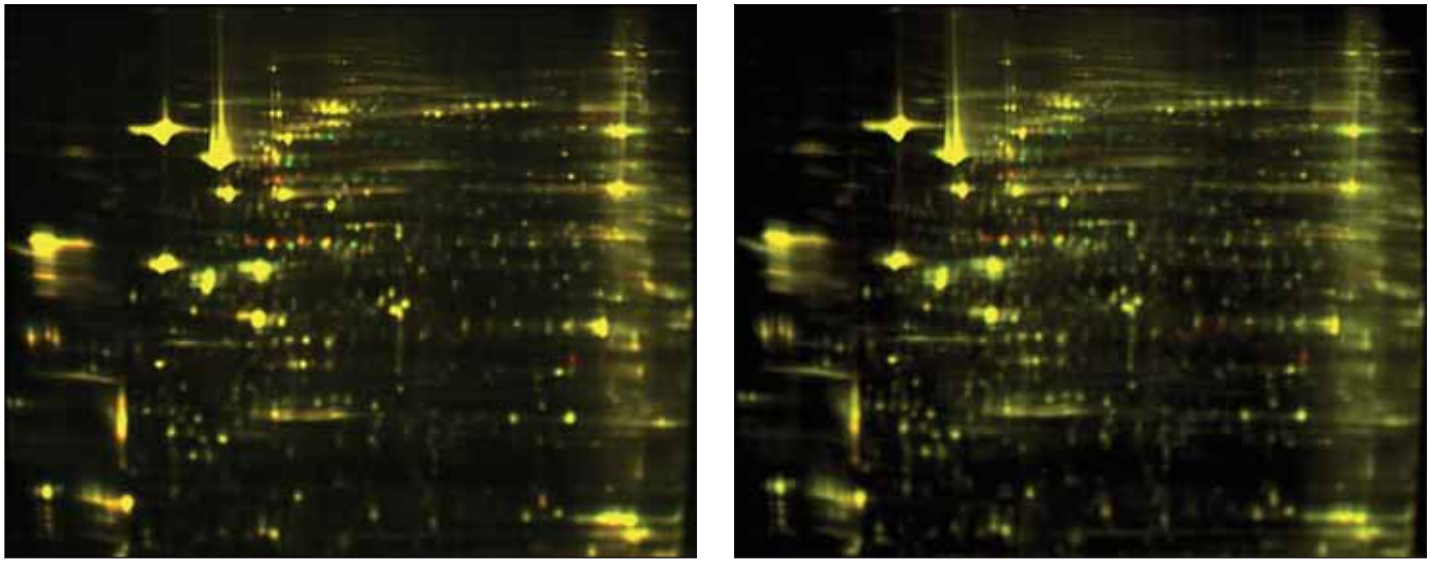

Fig 3. Images of a 2-D DIGE gel acquired on the Ettan DIGE Imager (left) and Typhoon scanner (right).

Ettan DIGE Imager specifications

Light source	Metal halide lamp, coupled into fiber bundle
Lamp lifetime	1000 h
Scanning	Camera lens, moving sample, 1 × 1 cm images detected on-the-fly
Scanning time: 255 x 196 mm gel, three colors Ettan DALT gel, one color	 Approximately 30 min 7–11 min
Scan area	270 × 205 mm
Uniformity	± 5% over entire scan area
Detection	Peltier-cooled CCD camera
Wavelength selection	Bandpass excitation (380–650 nm) and emission (465–695 nm) filters
Fluorescence dye compatibility	Cy2, Cy3, Cy5, Deep Purple™ Total Protein Stain and SYPRO™ Ruby
Detection limit	Cy2: 3 fmol; Cy3, Cy5: 1 fmol; Deep Purple Total Protein Stain: 1 ng; SYPRO Ruby: 5 ng
Linear detection range	3.5 orders of magnitude
Linearity	< 7.5% relative standard deviation over entire dynamic range
Pixel size	Software selectable: 40, 100, or 200 µm
Pixel accuracy	± 100 µm
Resolution	40 µm
Local reproducibility	± 50 µm between the first and third scans of the same gel
Signal reproducibility	< 5% difference between the first and third scans of the same gel
Software	Scan control software for Windows XP
External interface	10 Base-T Ethernet using TCP/IP protocol
Data format	16-bit (65,536 levels) TIFF, .GEL file extension
Instrument size	880 × 450 × 730 mm, footprint 710 × 680 mm
Weight	64 kg
Power requirements	115/230 V (autoswitching), 50–60 Hz, < 600 W

Ordering information

Ettan DIGE Imager, including installation kit (power cable, CD with scan control software, test slides, and user manual with installation guidelines)	63-0056-42
Ettan DIGE Imager Cassette, 276 x 212 mm, for DALT gel sandwiches	11-0027-04
Ettan DIGE Imager Cassette, 180 x 160 mm, for SE 600 series gel sandwiches	11-0027-32
Ettan DIGE Imager Cassette, with low-fluorescent glass, for naked gels	11-0027-33

Imaging software

ImageMaster 2D Platinum v6.0 DIGE Enabled	11-0034-25
ImageMaster 2D Platinum v6.0	11-0034-27
DeCyder 2-D Differential Analysis Software v6.5, preinstalled network (including PC and single concurrent network user license)	28-4012-01
DeCyder 2-D Differential Analysis Software v6.5, one network user license	11-0035-82
DeCyder Extended Data Analysis Software, one network user license	28-4012-03
ImageQuant TL	63-0050-72

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Data File 28-4021-17 AA