Electrophoresis



PROTEAN® i12™ IEF System

12 Lanes. Individual Control. Total Confidence.



PROTEAN® i12™ IEF System

With individual lane control, Bio-Rad's PROTEAN i12 IEF system is the only isoelectric focusing cell that can simultaneously run multiple lanes, each with a different sample, protocol, and pH gradient.

- Optimize your experiments in fewer runs
- Boost lab productivity by performing multiple experiments at once
- Obtain better quality data with less experimental risk one irregular sample cannot compromise the entire run



Individual lane control — optimization, efficiency, and confidence

- 12 individual, separately programmable power supplies make the PROTEAN i12 IEF system a unique problem solver
- Save time by optimizing as many as 12 conditions simultaneously. Investigate different samples, pH gradients, and protocols in the same run and get optimal results for each
- Use the system more efficiently because different experiments can now be run together
- Set a precise current limit for each lane and proceed with the confidence that each condition will be precisely met. The current you program is the current that is delivered, every time, regardless of the other samples in the run



Touch-screen — intuitive and easy to use interface

- Set up runs and create protocols effortlessly
- Convenient file organization and user-defined default parameters let you control the system
- USB port allows you to transfer and store data. Use Excel or the PROTEAN i12 Reporter web application for analysis









Web application — effortless data analysis and protocol creation

- Create graphs and reports using the PROTEAN i12
 Reporter, a free web-based application for analyzing run data generated by the system
- Use the web application to create protocols and transfer them back into the instrument
- Access this application at www.i12reporter.com

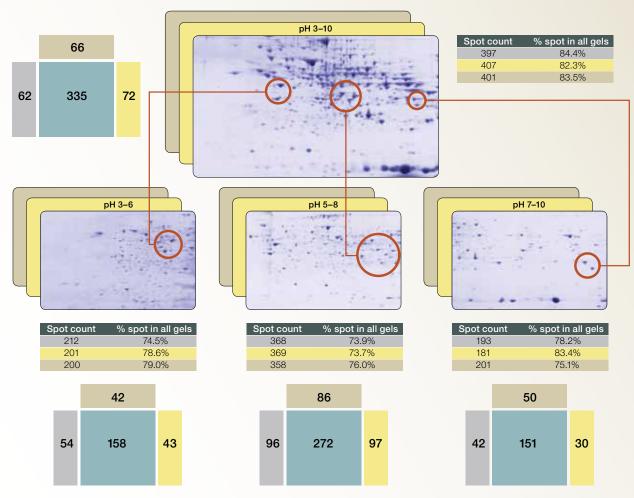
System flexibility — work the way you want

- Innovative tray and electrode design allows running strips gel side down or gel side up and loading with sample cups
- Electrodes snap in and out of all six tray sizes
- DIGE-compatible lid makes the system ideal for light sensitive dyes and labels

PROTEAN i12 IEF system — more data, more reliably in fewer runs

Achieve highly reproducible data and extended separation over multiple pH ranges

Data showing extended separation on multiple pH range IPG strips was generated in a single IEF run. Four different pH gradients and protocols were run simultaneously in triplicate to compare the separation capacity of the broad range pH 3–10 strip with the combination of the narrow range pH 3–6, pH 5–8, and pH 7–10 strips. The red circles highlight the increased resolution attainable with narrow range strips. Broad range separation can, therefore, be achieved with higher resolution on midi format gels without the need for multiple runs. The box diagrams display the number of spots found in all three replicates of each pH range, showing that a high level of reproducibility was realized among the gels.



A mouse liver sample was extracted in a urea-thiourea-CHAPS solution. The extract was run in a single PROTEAN i12 IEF cell run on twelve 11 cm ReadyStrip™ IPG strips simultaneously at each of the following pH ranges: 3–10, 3–6, 5–8, and 7–10. Each pH gradient was run in triplicate. The second dimension for each IPG strip was run in 8–16% gradient Criterion™ precast gels that were stained with Bio-Safe™ Coomassie stain. The above figure shows a representative gel image for each pH range along with the spot counts for each replicate. The box diagrams show the number of spots found in all three replicates.

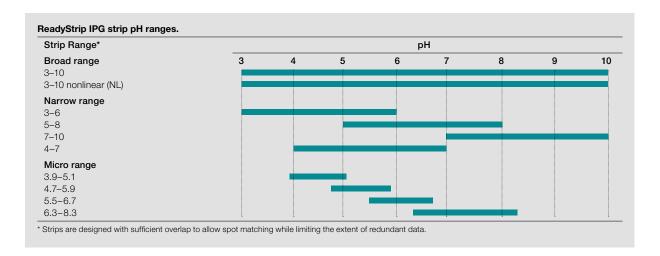
Key points of this experiment:

- Running different pH gradients and protocols in one run
- Achieving a high level of reproducibility between gels
- Running each pH gradient in triplicate
- Achieving extended separation with narrow-range strips



ReadyStrip IPG strips — a key component of the PROTEAN i12 IEF system

- Bio-Rad's high-quality ReadyStrip IPG strips come in five lengths (7 cm, 11 cm, 17 cm, 18 cm, and 24 cm) and ten pH ranges that cover broad, narrow, and micro ranges
- Narrow and micro pH ranges increase the number of centimeters per pH unit for enhanced resolution
- Tight gel-length tolerances guarantee pH consistency



Specifications

Input power	100-240 VAC, 50/60 Hz	Environmental	For indoor use only, at altitudes of
Fuse	Two 6.3-amp, time delay, 5 × 20 mm	requirements	up to 1829 m (6000 ft). Operates at
Power input	IEC 60320 standard cord set with ground		10-35°C ambient temperature, with
Power output			maximum 90% relative humidity
Voltage per lane	0, 50-10,000 V	Regulatory	
Current per lane	0-100 μA, 1 μA intervals	Safety	EN 61010-1, UL STD No. 61010A-1, CAN/
Power	0-1 W per lane		CSA C22.2 No. 61010-1-04, IEC 61010-1
Peltier platform		EMC	EN 61326 Class A Equipment for
Tray capacity	1 tray		Measurement, Control, and Laboratory
Temperature	10-25°C ± 0.5°C @ max. ambient temperature 23°C		Use, General Requirements
•	15-25°C ± 0.5°C @ max. ambient temperature 31°C	Dimensions (W × D × H)	$46 \times 34.5 \times 18.5 \text{ cm} (18.1 \times 13.6 \times 7.3 \text{ in})$
Focusing trays		Weight	8.6 kg (19 lbs)
Material	Polycarbonate	User Interface	
IPG strip length	7, 11, 13, 17, 18, and 24 cm	Display	QVGA resolution (320 × 240).
Capacity	1–12 IPG strips per focusing tray		Touch screen or mouse control
Maximum	7 cm: 7 ml; 11 cm: 10 ml; 13 cm: 11.2 ml;	Programmable	Yes
channel volume	17 cm: 14.2 ml; 18 cm: 15.2 ml;	Ramping	Step, linear, gradual, and hold voltage
	24 cm: 20.2 ml		ramping used for each focusing step.
Rehydration/equil	ibration trays		Hold mode as a final step to prevent
Material	Polystyrene		diffusion when focusing is complete
IPG strip length	7, 11, 13, 17, 18, and 24 cm	Protocol capacity	2 GB, storage of approximately 20,000
Capacity	1–12 IPG strips per tray	· ,	data and protocol files
Maximum	7 cm: 6.8 ml; 11 cm: 9.6 ml; 13 cm: 10.5 ml;	Data collection	.DAT file format
channel volume	17 cm: 14.2 ml: 18 cm: 16 ml; 24 cm: 19 ml		





Ordering Information

Catalog #	Description	Catalog #	Description				
164-6000	PROTEAN i12 IEF Isoelectric System, 90–240 VAC, includes basic unit, positive and negative electrode assemblies, 7 cm, 11 cm, and 17 cm focusing trays	164-6021	i12 Sample Cups, pkg of 25, disposable sample cups for use with the PROTEAN i12 IEF system sample cup holder (#164-6020)				
	with IPG strip retainers, 1 pack each of 7 cm, 11 cm,	164-6030	Gel-Side Up Electrode Wicks, pkg of 100, precut				
	and 17 cm rehydration/equilibration trays, 2 pairs of	104 0000	electrode wicks, for use with the PROTEAN i12 IEF				
	forceps, 2 packs electrode wicks for gel-side down and		system for gel-side up applications				
	gel-side up applications, mineral oil, 2 cleaning brushes,	164-6031	Gel-Side Down Electrode Wicks, pkg of 500, precut				
	cleaning concentrate, 2 USB flash drives, 3 styluses,		electrode wicks, for use with the PROTEAN i12 IEF				
	pH 3–10 ReadyStrip™ IPG strips in 7 cm, 11 cm, and		system for gel-side down applications				
	17 cm lengths, rehydration sample buffer, and instruction	164-6012	Negative Electrode Assembly, pkg of 1, replacement				
	manual. 13 cm, 18 cm, and 24 cm trays and cup loading		negative electrode assembly, for use with the				
	accessories can be purchased separately		PROTEAN i12 IEF system, can be used with all				
164-6001	i12 IEF Isoelectric Focusing Cell, includes basic		sizes of i12 focusing trays				
	unit, electrode assemblies, and 3 styluses. Focusing	164-6011	Positive Electrode Assembly, pkg of 1, replacement				
	trays and other accessories sold separately.		positive electrode assembly, for use with the				
164-6107	i12 7 cm Focusing Tray, pkg of 1, 7 cm focusing tray,		PROTEAN i12 IEF system, can be used with all				
	holds up to twelve 7 cm IPG strips, includes 2 IPG strip retainers for gel-side down applications, for use with the	164-6010	sizes of i12 focusing trays				
	PROTEAN i12 IEF system	104-0010	Electrode Assembly Pair, pkg of 1 pair, positive and negative electrode assemblies, for use with the				
164-6111	i12 11 cm Focusing Tray, pkg of 1, 11 cm focusing tray,		PROTEAN i12 IEF system, can be used with all sizes of				
	holds up to twelve 11 cm IPG strips, includes 2 IPG strip		i12 focusing trays				
	retainers for gel-side down applications, for use with the	165-4072	Cleaning Brushes, pkg of 2, cleaning brushes				
	PROTEAN i12 IEF system	161-0722	Cleaning Concentrate, 1 kg, concentrated cleaning				
164-6113	i12 13 cm Focusing Tray, pkg of 1, 13 cm focusing tray,		solution for use with the PROTEAN i12 IEF system				
	holds up to twelve 13 cm IPG strips, includes 2 IPG strip	164-6060	USB Flash Drives, pkg of 2, 2 GB flash drives,				
	retainers for gel-side down applications, for use with the		compatible with the PROTEAN i12 IEF system,				
	PROTEAN i12 IEF system		for transferring data from the PROTEAN i12 IEF				
164-6117	i12 17 cm Focusing Tray, pkg of 1, 17 cm focusing tray,		system to a computer for data analysis				
	holds up to twelve 17 cm IPG strips, includes 2 IPG strip	164-6050	Stylus, pkg of 3, for use on the PROTEAN i12 IEF				
	retainers for gel-side down applications, for use with the		system touch-screen user interface				
104 0440	PROTEAN i12 IEF system	163-2129	Mineral Oil, 500 ml				
164-6118	i12 18 cm Focusing Tray, pkg of 1, 18 cm focusing tray,	165-4070	Forceps, pkg of 1 pair, fine-tipped forceps for				
	holds up to twelve 18 cm IPG strips, includes 2 IPG strip retainers for gel-side down applications, for use with the	162 2105	handling immobilized pH gradient (IPG) strips				
	PROTEAN i12 IEF system	163-2105	ReadyPrep [™] 2-D Starter Kit, 2-D gel electrophoresis kit, includes protein sample and buffers for IPG				
164-6124	i12 24 cm Focusing Tray, pkg of 1, 24 cm focusing tray,		strip rehydration, focusing, and transfer to second dimension (IPG strips not included)				
	holds up to twelve 24 cm IPG strips, includes 2 IPG strip						
	retainers for gel-side down applications, for use with the	161-0378	Precision Plus Protein™ Standard Plugs, pkg of 24,				
	PROTEAN i12 IEF system		1 mm thick agarose plugs containing 10 Strep-tagged				
165-4035	i12 7 cm Rehydration/Equilibration Trays, pkg of 25,		recombinant proteins (10-250 kD), including three				
	7 cm rehydration/equilibration trays, hold up to twelve 7 cm		reference bands				
	IPG strips, for use with the PROTEAN i12 IEF system						
165-4025	i12 11 cm Rehydration/Equilibration Trays, pkg of 25,		Scan this QR code to learn more about				
	11 cm rehydration/equilibration trays, hold up to twelve	256	the PROTEAN i12 IEF system, or visit				
	11 cm IPG strips, for use with the PROTEAN i12 IEF system	答到的					
164-6313	i12 13 cm Rehydration/Equilibration Trays, pkg of 25,	IN THE STATE OF	www.bio-rad.com/i12IEF.com.				
	13 cm rehydration/equilibration trays, hold up to twelve						
	13 cm IPG strips, for use with the PROTEAN i12 IEF system	ReadyStrip I	ReadyStrip IPG Strips, 12 per package				
165-4015	i12 17 cm Rehydration/Equilibration Trays, pkg of 25,	pH Range	7 cm 11 cm 17 cm 18 cm 24 cm				
	17 cm rehydration/equilibration trays, hold up to twelve	pH 3-10	163-2000 163-2014 163-2007 163-2032 163-2042				
165-4041	17 cm IPG strips, for use with the PROTEAN i12 IEF system	pH 3–10 NL*	163-2002 163-2016 163-2009 163-2033 163-2043				
	i12 18 cm Rehydration/Equilibration Trays, pkg of 25, 18 cm rehydration/equilibration trays, hold up to twelve	pH 3–6	163-2003 163-2017 163-2010 163-2035 163-2045				
	18 cm IPG strips, for use with the PROTEAN i12 IEF system	pH 4–7	163-2001 163-2015 163-2008 163-2034 163-2044				
165-4043	i12 24 cm Rehydration/Equilibration Trays, pkg of 25,	pH 5-8	163-2004 163-2018 163-2011 163-2036 163-2046				
. 30 .010	24 cm rehydration/equilibration trays, hold up to twelve	pH 7–10	163-2005 163-2019 163-2012 163-2037 163-2047				
	24 cm IPG strips, for use with the PROTEAN i12 IEF system	pH 3.9-5.1	163-2028 163-2024 163-2020 163-2038 163-2048				
164 6040	IDC Ctuin Detainage plus of 0 replacement IDC etrip	pH 4.7–5.9	163-2029 163-2025 163-2021 163-2039 163-2049				

ricadyothp ir d othps, 12 per package									
pH Range	7 cm	11 cm	17 cm	18 cm	24 cm				
pH 3-10	163-2000	163-2014	163-2007	163-2032	163-2042				
pH 3-10 NL*	163-2002	163-2016	163-2009	163-2033	163-2043				
pH 3-6	163-2003	163-2017	163-2010	163-2035	163-2045				
pH 4-7	163-2001	163-2015	163-2008	163-2034	163-2044				
pH 5-8	163-2004	163-2018	163-2011	163-2036	163-2046				
pH 7–10	163-2005	163-2019	163-2012	163-2037	163-2047				
pH 3.9-5.1	163-2028	163-2024	163-2020	163-2038	163-2048				
pH 4.7-5.9	163-2029	163-2025	163-2021	163-2039	163-2049				
pH 5.5-6.7	163-2030	163-2026	163-2022	163-2040	163-2050				
pH 6.3-8.3	163-2031	163-2027	163-2023	163-2041	163-2051				

^{*} NL, nonlinear gradient.

Excel is a trademark of Microsoft Corporation.





164-6040

164-6020

Bio-Rad Laboratories, Inc.

use with the PROTEAN i12 IEF system

IPG Strip Retainers, pkg of 2, replacement IPG strip retainers for use with all sizes of PROTEAN i12 focusing trays

i12 Sample Cup Holder, pkg of 1, 12-position sample cup

holder, includes 25 disposable sample cups (#164-6021), for

Life Science Group

Web site www.bio-rad.com USA 800 424 6723 Australia 61 2 9914 2800 Austria 01 877 89 01 Belgium 09 385 55 11 Brazil 55 31 3689 6600 Canada 905 364 3435 China 86 21 6169 8500 Czech Republic 420 241 430 532 Denmark 44 52 10 00 Finland 09 804 22 00 France 01 47 95 69 65 Germany 089 31 884 0 Greece 30 210 777 4396 Hong Kong 852 2789 3300 Hungary 36 1 459 6100 India 91 124 4029300 Israel 03 963 6050 Italy 39 02 216091 Japan 03 6361 7000 Korea 82 2 3473 4460 Malaysia 60 3 2117 5260 Mexico 52 555 488 7670 The Netherlands 0318 540666 New Zealand 64 9 415 2280 Norway 23 38 41 30 Poland 48 22 331 99 9 Portugal 351 21 472 7700 Russia 7 495 721 14 04 Singapore 65 6415 3170 South Africa 27 861 246 723 Spain 34 91 590 5200 Sweden 08 555 12700 Switzerland 061 717 95 55 Taiwan 886 2 2578 7189 Thailand 66 2 6518311 United Kingdom 020 8328 2000

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