



BTX[®]
 a division of Harvard Bioscience, Inc.

Gemini Twin Wave Electroporators



APPLICATIONS

- CRISPR transfections
- Suspension cells and adherent cells
- Transfection of eukaryotic cells and transformation of prokaryotic cells
- In vivo, In ovo, and In utero gene and drug delivery
- Tissue explants
- High-throughput electroporation

FEATURES AND BENEFITS

- Square wave and exponential decay wave electroporation in a single unit
- Multiple pulsing capabilities in both square and exponential decay waveforms (X2 systems)
- Large, easy-to-use touch screen interface
- Universal electroporation – transfects cells in vitro, in vivo, in ovo and adherent forms
- Preset protocols for the most common eukaryotic and prokaryotic cell types and the ability to add and modify protocols
- Safety—displays resistance measurements for each pulse with three layers of arc protection
- Data management—stores logs of every pulse delivered for QC and troubleshooting

The Gemini Twin Wave Electroporators are flexible systems allowing both square wave and exponential decay wave electroporation in a single unit. Prokaryotic cells typically respond well to exponential decay wave pulses and eukaryotic cells are transfected most efficiently with square wave pulses. Combining these two waveforms gives researchers total flexibility to achieve the highest efficiency for their applications.

GEMINI SC

The Gemini SC system is designed specifically for cuvette-based in vitro transfections of eukaryotic or prokaryotic cells in suspension. With a wide range of pulsing parameters, advanced safety features as well as dozens of preset protocols, the Gemini SC is ideal for any lab requiring efficient cell transfection or transformation without the use of costly reagents.

GEMINI X2 AND GEMINI X2 HT

The Gemini X2 system provides the ultimate experimental flexibility. This one easy setup allows for transfections in cuvettes or high throughput plates, or the capability to utilize the wide variety of BTX specialty electrodes for specific applications. In addition, Gemini X2 electrical output specifications are wide-ranging, making it the most versatile electroporation system available today.



Specifications

	SC	X2
Voltage Range	LV Mode: 10 to 500 V in 5 V steps HV Mode: 510 to 3000 in 10 V steps	LV Mode: 5 to 500 V in 1 V steps HV Mode: 505 to 3000 V in 5 V steps
Capacitance (Exponential Decay Wave)	LV Mode: 25 to 3275 μ F in 25 μ F steps HV Mode: 10, 25, 50 μ F	LV Mode: 25 to 3275 μ F in 25 μ F steps HV Mode: 10, 25, 35, 50, 60, 75, 85, μ F
Resistance (Exponential Decay Wave)	All Modes: 50 to 1000 Ω in 50 Ω steps	LV Mode: 25 to 1575 Ω in 25 Ω steps HV Mode: 50 to 1575 Ω in 25 Ω steps
Maximum Time Constant (Exponential Decay Wave)	3 s at 500 V peak 133 ms at 3,000 V peak	5 s at 500 V peak 133 ms at 3,000 V peak
Pulse Length Range (Square Wave)	LV Mode: 0.05 to 10 ms in 0.05 ms steps LV Mode 10 to 100 ms in 1 ms steps HV Mode: 50 μ s to 5 ms in 50 μ s steps	LV Mode: 10 to 999 μ s in 1 μ s steps LV Mode: 1 to 999 ms in 1 ms steps HV Mode: 10 to 600 μ s in 1 μ s steps
Operational Status	Internal self-test upon start-up	
Interface	7 in color touchscreen	
Input	100 to 240 VAC	
Charge Time	LV mode <7 s, HV mode <4 s	
Programmability	Store over 1000 protocols	
Safety	Pre-pulse sample resistance check, pulse over current protection , instrument arc control	

Ordering Info

Item No.	Description	Included Items
45-2040	Gemini X2 Electroporation System	Gemini X2 Generator, Safety Dome, Cuvettes 1 mm, 2 mm, 4 mm, pkg. of 30 (10 each), and Cuvette Rack 660
45-2041	Gemini X2 Electroporation Generator Only	Gemini X2 Electroporation Generator Only
45-2042	Gemini SC Electroporation System	Gemini SC Generator, Safety Dome, Cuvettes 1 mm, 2 mm, 4 mm, pkg. 30 (10 each), and Cuvette Rack 660
45-2043	Gemini SC Electroporation Generator Only	Gemini SC Electroporation Generator Only
45-2044	Gemini X2 High Throughput System, 96-well with HT-200	Gemini X2 Generator, Safety Dome, Cuvettes 1 mm, 2 mm, 4 mm, pkg. of 30 (10 each), and cuvette Rack 660, HT-200 Plate Handler, 2 mm gap HT plate, and 4 mm gap HT plate