





BTX Pulse Switcher for Gemini X2 and ECM 830



AUTOMATE GROUPED PULSE, BIPOLAR SWITCHING PROTOCOLS

Easily execute automatic grouped pulse, bipolar switching protocols by adding the BTX Pulse Switcher to your ECM 830 or Gemini X2 electroporation waveform generator. These systems are ideal for high efficiency transfection of mammalian cells and tissues, including difficult to transfect cell types, such as stem cells and primary cells.

- Simplify execution of advanced protocols—including automatic, hands-free bipolar switching
- Suitable for many applications including in vitro, in vivo, in utero, in ovo, and ex vivo
- · Easy to install

Significantly expand pulsing application capabilities

The ECM 830 and Gemini X2 solutions already have an established electroporation publication record, including use in CRISPR gene editing technologies. Adding a BTX Pulse Switcher to your system further expands your application protocol capabilities.

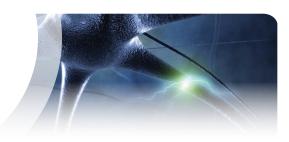
- Program up to ten groups of pulses with defined polarities (+ or -) and specified numbers of pulses and pulse lengths—within each group
- Maximum number of pulses increases to 100 pulses per group and 1,000 pulses per protocol
- Minimum interval between pulses and between groups of pulses reduces to just 50 ms
- Includes ten additional preset electroporation protocols in the new Pulse Switcher protocol category



Australian distributors: Fisher Biotec Australia free call: 1800 066 077 email: info@fisherbiotec.com web: www.fisherbiotec.com









Protocol Specifications after Pulse Switcher Installation

Bipolar Square Wave Protocols		
Voltage Range	Voltage magnitude is constant for all groups	
LV Mode	5 to 500 V in 1 V steps	
HV Mode	505 to 3000 V in 5 V steps	
Pulse Groups	1 to 10 groups	
For each group:		
Voltage Polarity in Group	Positive or Negative	
Pulses in Group		
LV Mode	1 to 100 pulses per group	
HV Mode	1 to 100 pulses per group	
Pulse Duration in Group		
LV Mode	10 to 999 μs in 1 μs steps; 1 to 999 ms in 1 ms steps	
HV Mode	10 to 600 μs in 1 μs steps	
Pulse Interval in Group	0.05 to 10 s in 0.05 s steps	
Post-Group Interval	0.05 to 10 s in 0.05 s steps	

The BTX Pulse Switcher is compatible with many accessories including:

- BTX Safety Domes/Safety Stands for cuvette- and flatpack-based in vitro electroporation
- Specialty/in vivo electrodes with 4 mm diameter banana cables or 4 mm diameter banana cable adapters
- HT-100 (Manual Column Switching) High-Throughput Electroporation Plate Handlers

Specifications

Standard Capabilities		
Voltage Range	1 to 3000 VDC	
Pulse Length Range	10 μs to 10 s	
Other Specifications		
Compatible BTX Generators	Gemini X2 and ECM 830*	
Power Supply Input Voltage Ratings	100 to 240 VAC, 50/60 Hz	
Pulse Switcher Input Voltage	5 VDC, 100 mA	
Warranty	Two Years	
Storage Temperature	-10°C to 70°C (14°F to 158°F)	
Operating Temperature	5°C to 40°C (40°F to 104°F)	
Intended Use	Indoor Use Only	
Operating/Storage Humidity	20% to 80% RH, non-condensing	
Pollution Degree	IP2X	
Insulation Category	Category II	
Regulatory Certifications	CE, WEEE, RoHS	
Physical Characteristics		
Dimensions L x W x D	8.9 x 7.8 x 5.4 cm (3.5 x 3.1 x 2.1 in)	
Weight	276 g (0.6 lb)	

 $^{^*}$ Compatible with 7-inch touchscreen instruments only.

Item No.	Description	Included Items
Pulse Switcher Systems		
45-2061	Pulse Switcher	Pulse Switcher, Power Supply and USB Connector Cable
45-2062	Gemini X2 Pulse Switcher System	Gemini X2 Generator, Pulse Switcher, Power Supply and USB Connector Cable, Safety Dome, Cuvettes 1 mm, 2 mm, 4 mm, pkg. of 30 (10 each), and Cuvette Rack
45-0669	ECM 830 Pulse Switcher System	ECM 830 Generator, Pulse Switcher, Power Supply and USB Connector Cable, Safety Stand, Cuvettes 1 mm, 2 mm, 4 mm, pkg. of 30 (10 each), and Cuvette Rack



Ordering Info