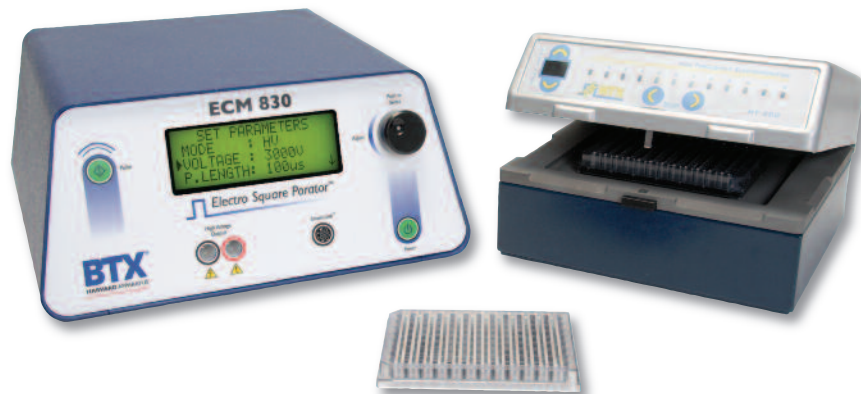


BTX[®]

HARVARD APPARATUS



ECM[®] 830 HT

HIGH THROUGHPUT

MULTI-WELL ELECTROPORATION SYSTEM

TECHNICAL SPECIFICATIONS

APPLICATIONS

- Mammalian Cells
- Primary Cells
- Stem Cells
- siRNA Libraries

PRODUCT DESCRIPTION

The BTX[®] High Throughput (HT) System, offers a multi-well electroporation technology for processing multiple samples in seconds. Using the HT Multi-Well plates instead of traditional cuvettes, the researcher can transition from a single cuvette to either a 96 well or 25 well electroporation plate by using one simple plate handler. This increases yields and the number of experiment runs in a single day. Experiments take seconds to run, allowing for quick and efficient optimization of the electrical and biological parameters. Once optimized, samples are rapidly processed increasing yields and saving valuable time and money. The HT plate handler is compatible with the ECM 830 and some older ECM 830 generators (for more details regarding compatibility of your ECM 830 systems please contact BTX tech support). The HT System is comprised of 3 components: The HT Multi-Well Plates, an HT Plate Handler and the BTX ECM 830 Generator.

HT PLATES

Each HT plate consists of either 96 or 25 individual wells with integrated electrodes. The 96-well plate assumes a traditional 96 well format i.e., 12 columns of 8 wells each. The 25-well format has 5 columns of 5 well each. Four different Multi-Well Plates are available: 96-well with 4 mm gap, 96-well 2 mm gap, 25-well 4 mm gap and 25-well 2 mm gap. Rapid protocol optimization of transformation and transfection parameters can be obtained by loading a plate with unique experimental samples. Optimization of electrical parameters can be achieved by pulsing each column within the plate with variable electrical settings. **The same electrical settings are applied to each well within a column.**

PLATE HANDLER

The key to the HT system is the combination of the Plate Handler and Multi-Well Plates. The Plate Handler holds the HT Multi-Well Plates; much like the safety stand holds the cuvettes. It delivers the pulse(s) to the wells using parameters set in the ECM[®] 830 generator. Specifically, the HT 200 plate handler offers the option of the delivery of multiple pulses column by column automatically.

GENERATOR

The final component of the HT System is a BTX ECM[®] 830 Square Wave Electroporation Generator.

ECM[®] 830 High Throughput TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS FOR THE HT-100/HT-200

Standard Capabilities:

Power	100 to 240 VAC, 50/60 Hz, 15 W, 0.50 A fuse (2)
Voltage Range	0 to 3000V DC (Pulse)
Pulse Length Range	10 µsec to 10 sec
Pulse Number Range	1 to 99
Operating Temperature	5° to 40°C
Intended Use	Indoor Use
Relative Humidity	20 to 80%
Pulse Length Range	10 µsec to 10 sec
Maximum Altitude	2,000 m (6,562 ft)
Pollution Degree	II
Insulation Degree	CAT I

Physical Characteristics for Models HT-100 and HT-200:

Width x Depth x Height	23 x 21.5 x 14 cm (9.1 x 8.5 x 5.5 in)
Weight	4.8 Kg (10.6 lbs)

TECHNICAL SPECIFICATIONS FOR THE ECM[®] 830 GENERATOR

Standard Capabilities:

Display	Type: 20-character by 4-line liquid crystal Display. LED backlit.
Power Source Voltage	100 to 240 Vac, 50 to 60 Hz, CAT II
Power	Pulse: 500 W Idle: 150 W
Fusing	T2.5 250 V
Environmental Characteristics:	
Intended Use	10°C to + 40°C
Cooling	Convection through metal case
Relative Humidity	90% relative humidity
Altitude	2,000 m (operating)
Mechanical Characteristics:	
Footprint	12.5 x 12.25 x 5.5 in (31.75 x 3.12 x 13.97 cm) (W x D x H)
Weight	15 lbs (6.8 kg)
Controls	Single rotary encoder with integrated push button

Electrical Characteristics:

Voltage	5 to 500 Volts (LV mode) @ 1 Volt resolution 30 to 3000 Volts (HV mode) @ 5 Volts resolution (Voltage Delivery @ 5% accuracy and Voltage Monitoring @ 5.0% accuracy)
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TECHNICAL SPECIFICATIONS CONTINUED:

Pulse Length	10 µs to 999 µs (LV mode) @ 1 µs resolution 1 ms to 999 ms (LV mode) @ 1 ms resolution 1 s to 10s (LV Mode) @ 0.1 s resolution 10 µs to 600 µs (HV mode) @ 1 µs resolution
Pulse Interval	100 ms to 10 sec @ 1 ms resolution
Multiple Pulsing	1 to 99 pulses
Current Limit	500 A limit at 100 µs
Pollution Degree 2	Not to be operated in conductive pollutants atmosphere

Note:

LV Mode Less than a 20% V drop at the end of the pulse with the following constraints: PL² 25 ms, load 3 20 1/2. PL² 1 sec, load 3 1k 1/2. PL² 10 sec, load 3 10k 1/2

HV Mode Less than a 10% V drop at the end of the pulse with the following constraints: PL² 600 µs, load 3 40 1/2

ORDERING INFORMATION

Order #	Product
45-0421	Includes ECM 830 Generator, 4 mm gap, 2 x 96-Well Plates, Plate Seals and HT-200 Plate Handler
45-0411	Includes ECM 830 Generator, 4 mm gap, 6 x 25-Well Plates, Plate Seals and HT-200 Plate Handler
45-0452	96-Well Disposable Electroporation Plates, 4 mm gap, 250 µl, 1 plate
45-0450	96-Well Disposable Electroporation Plate, 2 mm gap, 125 µl, 1 plate
45-0462	25-Well Disposable Electroporation Plate, 4 mm gap, 250 µl, 1 plate
45-0466	25-Well Disposable Electroporation Plate, 2 mm gap, 125 µl, 1 plate
45-0463	25-Well Disposable Electroporation Plate, 4 mm, 250 µl, pkg. of 6
45-0467	25-Well Disposable Electroporation Plates, 2 mm, 125 µl, pkg. of 6
45-0401	HT-200 Plate Handler, Automatic Column Switching

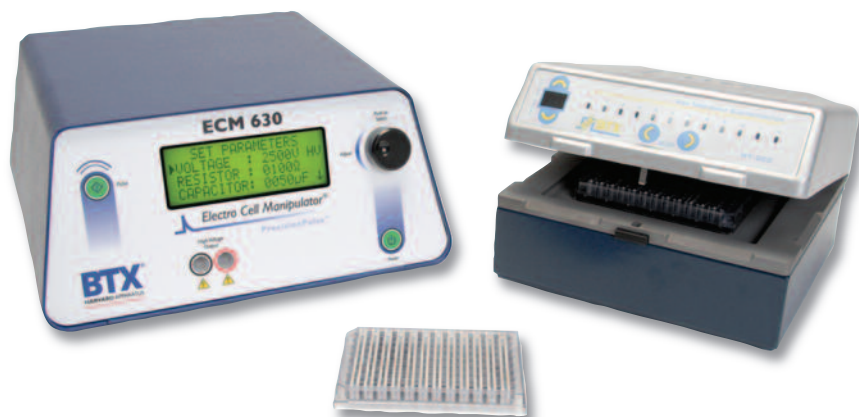
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ECM[®] 630 HT

HIGH THROUGHPUT

MULTI-WELL ELECTROPORATION SYSTEM

TECHNICAL SPECIFICATIONS

APPLICATIONS

- Yeast
- Insect Cells
- Bacteria
- cDNA Libraries
- BAC library

PRODUCT DESCRIPTION

The BTX[®] High Throughput (HT) System, offers multi-well electroporation technology for processing multiple samples in seconds. Using the HT Multi-Well plates instead of traditional cuvettes, the researcher can transition from a single cuvette to either a 96 well or 25 well electroporation by using one simple plate handler. This increases yields and the number of experiment runs in a single day. Experiments take seconds to run, allowing for quick and efficient optimization of the electrical and biological parameters. Once optimized, samples are rapidly processed increasing yields and saving valuable time and money. The HT plate handler is compatible with the ECM[®] 630 including older ECM[®] 630 generators.

HT PLATES

Each HT plate consists of either 96- or 25-individual wells with integrated electrodes. The 96-well plate assumes a traditional 96 well format i.e., 12 columns of 8 wells each. The 25-well format has 5 columns of 5 wells each. Four different Multi-Well Plates are available: 96-well with 4 mm gap, 96-well 2mm gap, 25-well 4 mm gap and 25-well 2 mm gap. Rapid protocol optimization of transformation and transfection parameters can be obtained by loading a plate with unique experimental samples. Optimization of electrical parameters can be achieved by pulsing each column within the plate with variable electrical settings. **The same electrical settings are applied to each well within a column.**

PLATE HANDLER

The key to the HT system is the combination of the Plate Handler and Multi-Well Plates. The Plate Handler holds the HT Multi-Well Plates; much like the safety stand holds the cuvettes. It delivers a single pulse to the wells using parameters set in the ECM[®] 630 generator. Specifically, the HT 100 plate handler applies a single pulse to each column of a plate while switching through columns is performed manually.

GENERATOR

The final component of the HT System is a BTX ECM[®] 630 Exponential Decay Wave Electroporation Generator.

ECM[®] 630 High Throughput TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS FOR THE HT-100/HT-200

Standard Capabilities:

Power	100 to 240 VAC, 50/60 Hz, 15 W, 0.50 A fuse (2)
Voltage Range	0 to 3000V DC (Pulse)
Pulse Length Range	10 µsec to 10 sec
Pulse Number Range	1 to 99
Operating Temperature	5° to 40°C
Intended Use	Indoor Use
Relative Humidity	20 to 80%
Pulse Length Range	10 µsec to 10 sec
Maximum Altitude	2,000 m (6,562 ft)
Pollution Degree	II
Insulation Degree	CAT I

Physical Characteristics for Models HT-100 and HT-200:

Width x Depth x Height	23 x 21.5 x 14 cm (9.1 x 8.5 x 5.5 in)
Weight	4.8 Kg (10.6 lbs)

TECHNICAL SPECIFICATIONS FOR THE ECM[®] 630 GENERATOR

Standard Capabilities:

Display	Type: 20-character by 4-line liquid crystal Display. LED backlit.
Power Source Voltage	100 to 240 Vac, 50 to 60 Hz, CAT II Power 500 W (Pulsed), 50 W (Idle)
Fusing	2.5 A, T rating 250 V

ENVIRONMENTAL CHARACTERISTICS

Intended Use	Indoor use only
Operating Temperature	10° C to + 40° C
Cooling	Convection through metal case
Relative Humidity	60%
Altitude	2,000 m (operating)

MECHANICAL CHARACTERISTICS

Footprint	12.5" x 12.25" x 5.5" (W x D x H)
Weight	13.6 lbs (6.2 kg)
Controls	Single rotary encoder with integrated push button

Meets requirements of Directive 89/336/EEC for Electro-magnetic Compatibility (EC) and Low-Voltage Directive 73/23/EEC for Product Safety.

Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

- EN 50081-1 Emissions
- EN 55011 Class B Radiated and Conducted Emissions
- EN 55082-1 Immunity
- IEC 10004-2 Electrostatic Discharge Immunity
- IEC 10004-3 RF Electromagnetic Field Immunity
- IEC 10004-4 Electrical Fast Transient/Burst Immunity
- Low Voltage Directive 73/23/EEC

ORDERING INFORMATION

Order #	Product
45-0423	Includes ECM 630 Generator, 2 mm gap, 2 x 96-Well Plates, Plate Seals and HT-200 Plate Handler
45-0051	Includes ECM 630 Generator, 2 mm gap, 6 x 25-Well Plates, Plate Seals and HT-200 Plate Handler
45-0452	96-Well Disposable Electroporation Plates, 4 mm gap, 250 µl, 1 plate
45-0450	96-Well Disposable Electroporation Plate, 2 mm gap, 125 µl, 1 plate
45-0462	25-Well Disposable Electroporation Plate, 4 mm gap, 250 µl, 1 plate
45-0466	25-Well Disposable Electroporation Plate, 2 mm gap, 125 µl, 1 plate
45-0463	25-Well Disposable Electroporation Plate, 4 mm, 250 µl, pkg. of 6
45-0467	25-Well Disposable Electroporation Plates, 2 mm, 125 µl, pkg. of 6
45-0400	HT-100 Plate Handler, Manual Column Switching
45-0401	HT-200 Plate Handler, Automatic Column Switching

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