

ECM 630 Specifications Sheet



Product Description

The ECM 630 is a new state of the art exponential decay wave electroporation system designed for *in vitro* and *in vivo* electroporation applications. This system incorporates features that make it the most technically advanced exponential decay electroporation system currently available. The generator utilizes the new BTX Power Platform Technology design and novel digital user interface. The revolutionary Precision Pulse™ System provides the researcher unparalleled power in controlling the time constant. With the ability to deliver a maximum of 6000A in the Low Voltage Mode, the ECM 630 is the most powerful generator in its class. Over 200 ECM 600 protocols may be duplicated with this instrument. The additional ECM 630 resistor selection “none” will allow researchers to reproduce protocols from competitive systems lacking resistor settings or reporting “unlimited” resistance. Indeed, the ECM 630 will perform the widest range of electroporation applications among commercial electroporators on the market.

Product Application

Mammalian Cell Transfections/ Protein/Drug Electroincorporation

Long duration electroporation, consistent with the ECM 630 platform, has resulted in higher expression levels in COS-7, EDR3, DG44, and CV1 cell lines ⁽¹⁾. The ECM 630 will duplicate the five-fold increase in transfection efficiency in comparison to calcium phosphate precipitation for COS-7 reported by Ishmael et al. ⁽²⁾ for the ECM 600, as well as the murine T Lymphoma results reported by Sundback et al. ⁽³⁾.

Bacterial and Yeast Electroporation

The ECM 630 is the most flexible bacterial and yeast electroporator available, and will reproduce protocols by Beggs et al. for *Mycobacterium avium* ⁽⁴⁾; Sanders et al. for *Haemophilus influenza* and *Haemophilus somnus* ⁽⁵⁾; and Faber et al. for *Hansenula polymorpha* ⁽⁶⁾.

Plant Applications

Intact plant tissue and protoplasts may be transformed using the ECM 630, including the species *Agrostis palustris* (creeping bentgrass) and *Lycopersicon esculentum* (tomato) ⁽⁷⁾, as well as tobacco pollen transformation ⁽⁸⁾.

Other Cell Types

Exponential decay electroporation has been demonstrated to be superior to microinjection for medaka oocytes ⁽⁹⁾. Yee et al., transfected and expressed firefly luciferase in *Giardia lamblia* ⁽¹⁰⁾. In addition, Quillan et al. electrotransfected *Xenopus laevis* melanophores and fibroblasts ⁽¹¹⁾.

Specialty Electrode Applications: The BTX Choice

Takacs directed the electroporation of COS-7 in a 96-well plate format using single, 8-well and 96-well coaxial electrodes ⁽¹²⁾, while Parham et al. optimized transient gene expression in CHO, CV-1, COS-7, HEK 293, and NSO using the BTX Flow Through Electroporation System ⁽¹³⁾.

In Vivo Applications

Exponential decay generators may be used for a variety of animal *in vivo* applications, including drug delivery to pig carotid artery ⁽¹⁴⁾ and transdermal delivery of large molecules ⁽¹⁵⁾.

ECM 630® Specifications Sheet

Standard Capabilities

| | |
|----------------------------|---|
| Operational Status: | Internal self test upon start-up |
| Interface: | Digital User Interface |
| Input: | 110 V/220 V Universal |
| Charge Time: | 5 sec maximum |
| Voltage Range: | 10 – 500 V LV Mode/ 1 V resolution 50 – 2500 V HV Mode/ 5 V resolution |
| Capacitance Range: | 1µF, 25µF – 3275µF LV Mode/25µF resolution 25µF, 50µF HV Mode |
| Resistance Range: | 25 ohm – 1575 ohm/ 25 ohm resolution HV & LV Modes “None” setting to simulate alternative systems lacking resistance control LV Mode |
| Precision Pulse™ | Over 8300 RC Time Constants LV Mode 126 RC Time Constants HV Mode |
| Safety: | Short Circuit Proof Maximum Pulse Delay 10 sec |

Other Electrical Characteristics

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|------------------|--|
| Amperage: | 6000A limit LV Mode 3000A limit HV Mode |
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Physical Characteristics

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|--------------------|--|
| Footprint: | 12.5" x 12.25" x 5.5" (W-D-H) |
| Weight: | 10 lbs (4.5 kg) |
| Display: | 20 x 4 character LCD |
| Controls: | Single Rotary Encoder with push button toggle between all set parameters. Additional on/off Power and Start switches |
| Monitoring: | Monitoring and display of Vp and RC Time Constant |

Ordering Information

System

| <u>Model No</u> | <u>Available Configurations</u> |
|-----------------|--|
| 6300 | ECM 630 Electroporation System ECM 630 Generator with Power Supply Model 630B Safety Stand Model 610, 620, 640 Disposable Electroporation Cuvettes Plus™, 10 each Model 660 Cuvette Rack Manual and Instruction Sheets |

Accessories

| <u>Model No</u> | <u>Description</u> |
|-----------------|--|
| 4001 | Enhancer™ 400 Graphic Pulse Monitor with Computer and Printer Interfaces |
| 610 | Cuvettes Plus, 1mm gap, 50/pkg |
| 620 | Cuvettes Plus, 2mm gap, 50/pkg |
| 640 | Cuvettes Plus, 4mm gap, 50/pkg |

References

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4. Beggs et al., Journal of Bacteriology, 177 (17): 4836-4840 (1995)
5. Sanders et al., FEMS Microbiology Letters, 154 (2): 251-258 (1997)
6. Faber et al., Current Genetics, 25 (4): 305-310, (1994)
7. Lin et al., Plant Physiology and Biochemistry, 35 (12): 959-968 (1997)
8. Smith et al., Plant Science, 104: 49-58 (1994)
9. Chen et al., Zoological Studies, 34 (4): 215-234 (1995)
10. Yee, and Nash, T.E., PNAS, 92 (12): 5615-5619 (1995)
11. Quillan et al., PNAS, 92: 2894-2898 (1995)
12. Peterfy et al., Methods in Molecular and Cellular Biology, 5 (6): 353-362 (1995)
13. Parham et al., Cytotechnology, 28: 1-9 (1999)
14. Cui, Journal of the American College of Cardiology, 29: 201a (1997)
15. Zhang, et al., Bioelectrochemistry and Bioenergetics, 42: 283-292 (1997)

This product meets the requirements of the European Communities (EC),
and complies with EMC Directive 89/336/EEC and 73/23/EEC for product safety.