威尼德生物科技（北京）有限公司
V-LEADER BIOTECHNOLOGY(BEIJING)CO. TI

>Gene Pulser 630 Exponential attenuation wave electroporation instrument

- Description
- Working principle
- Performance and Advantages
- Configuration parameter
- Application area
- Application Cases

Company Profile

V-Leader Biotechnology (Beijing) Co., Ltd. is a technology-based enterprise dedicated to the research and development, production, manufacturing, and sales of life science instruments. The company has complete production, assembly, and inspection conditions, and strictly implements the IS09001 quality management system in the production and management process. At the beginning of its establishment, the company adhered to the manufacturing concept of "technology casting perfect products", actively established joint development relationships with multiple domestic research institutes, and provided intelligent and humanized products for laboratories. With reliable product quality and high-quality services, the company's products are spread throughout the market. We promise to create high-performance intelligent laboratory life science instrument system solutions with professional technical services and continuous technological accumulation, and strive to promote the rapid development of life sciences, adding bricks and tiles to life sciences. To promote the research and development of domestic life science instruments, the company has successively cooperated with well-known universities such as Zhejiang University, Shanghai University of Science and Technology, Wuhan University, Guangxi University, Hebei University of Technology, etc., and has made breakthrough progress. So far, the company has multiple independent intellectual property rights and software copyrights.

The company's current main R&D and production products include dual-wave all-purpose electroporators, exponential decay electroporators, square wave electroporators, ultraviolet crosslinking devices, molecular hybridization devices, in situ hybridization devices, fully automatic dilution spiral inoculators and other life science instruments. Among them, the dual-wave all-purpose electroporator fills the gap in the field of domestic electrotransfection equipment and addresses the "hollowing out" issue of domestic scientific instruments. The company adheres to the business philosophy of "taking quality as the foundation, products as the vehicle, market as the orientation, and customers as the center", aiming to create outstanding products with superior cost performance, perfect and meticulous after-sales service, and creating higher value for customers is our goal! Wineder Company will deeply implement the new development concept, keep innovating, forge ahead with determination, optimize product structure and performance, and enhance service capabilities. We strive to become a life science equipment manufacturer with leading technology, first-class products, and international competitiveness.

Exponential attenuation wave electroporation instrument

Gene Pulser 630

High precision pulse transmission

Pre pulse sampling resistance measurement

Preset commonly used bacterial and fungal programs

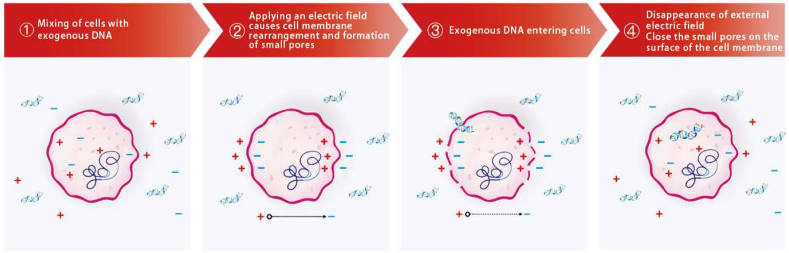
High transfection efficiency, energy automatic optimization

Real-time monitoring of arc protection

Product Description

Gene Pulser 630 ,The index attenuation wave electroporation instrument adopts an integrated design concept and a high-resolution and high-precision pulse system. Voltage, resistance, and capacitance values can be accurately adjusted over a large range, or voltage and time constants can be directly set. Electroporation is an efficient technique that utilizes the electric field strength and pulse time provided by it to introduce nucleic acids, proteins, and other molecules into various cells. By applying a high-intensity electric field, the permeability of the cell membrane is instantly increased, thereby absorbing exogenous molecules from the surrounding medium. This technology can introduce nucleotides, DNA and RNA, proteins, sugars, dyes, and viral particles into prokaryotic and eukaryotic cells. Compared to other conversion methods, the electroporation method does not use any chemical reagents, has low toxic 。 ty, is easy to operate, and has high transfection efficiency and survival rate. It is an effective alternative method. Therefore, it is widely used for the transformation of various bacteria and yeasts, the transformation of plant protoplasts and intact plant cells or tissues, in vivo and ex vivo protein/drug/gene transfer, and the transformation of some mammalian cells.

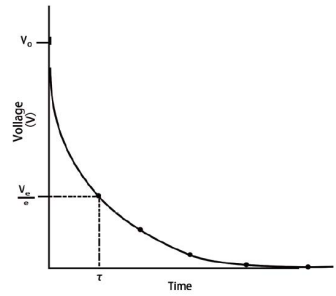
Working Principle



Performance and Advantages

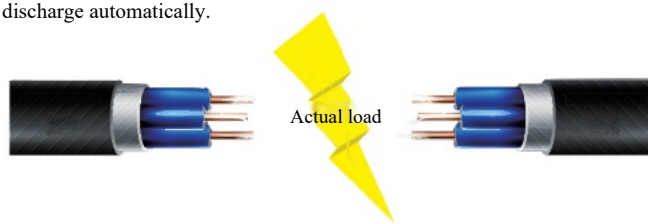
Real time display of waveform diagram

A novel method for detecting and recording electrical pulse parameters to ensure reproducibility of user experiments

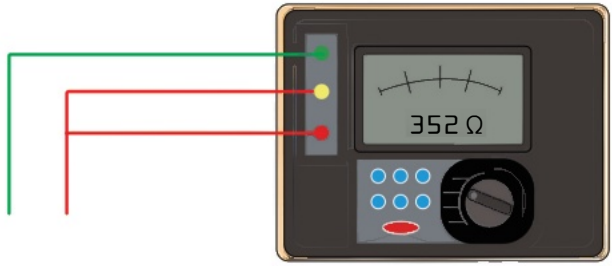


Circuit and Arc protection

The unique circuit design prevents the generation of electric sparks, ensures experimental repeatability, and protects the sample. When the pulse or circuit is interrupted, it can safely discharge automatically.



Support pre pulse sample resistance measurement function



■ Voltage and capacitance pre optimization program

Unique voltage and capacitance pre optimization program for customers to choose from, optimizing experimental plans

$$\tau = RC$$

■ Equipped with foot operated switch

Convenient and efficient operation for users

■ Unique circulating fan heating system

Unique circulating fan heating system ensures instrument and experimental stability

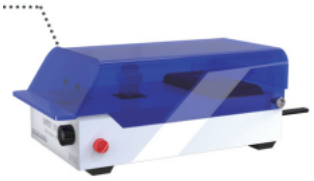
Performance and Advantages

User friendly digital interface

10 inch touch screen with intuitive programming to control all parameters, displaying real-time parameters and pulse waveforms after electroporation, including actual voltage，Capacitance, resistance, time constant, sample resistance, etc.

Independent electric swivel design

Easy to operate and move, suitable for sterile operation on ultra clean tables



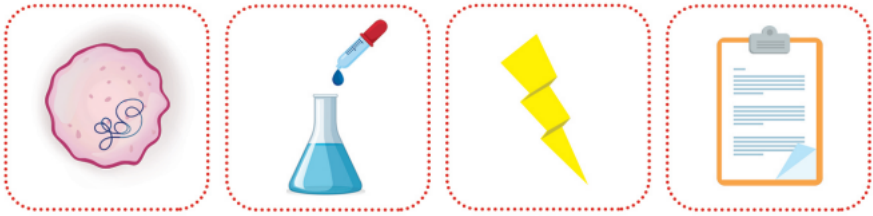
Preset optimization programs for commonly used bacteria and fungi

Bacterial Cells	Fungal Cells
E. coli	**S. cerivisiae**
A. tumefaciens	**P. pastoris**
P. aeruginosa	**C. albicans**
S. aureus	**S. pombe**
B. cereus	**D. discoideum**
S. pyogenes	
L. plantrum	

Configuration Parameters

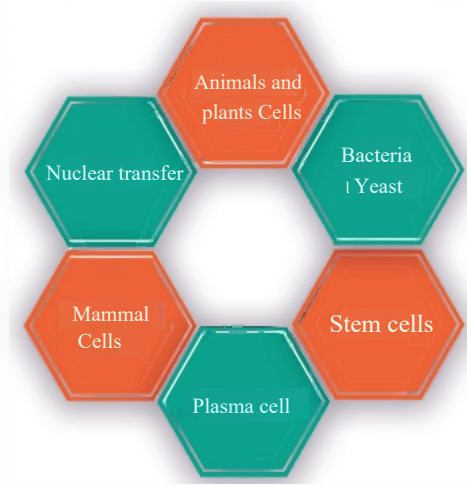
Pulse Wavefom	Exponential Wave
Work Status	Self-Diagnostic Function Upon Startup
Panel Interface	Digital User Interface,10 Inch Large Screen
Hv Mode	
Voltage Range	200-3000vdc/±2v
Capacitance	10、15、25、35、40、50uf
Parallel Resistor	50-2000Ω Step By 50Ω ,Or ∞
Pulse Time Constant	0.5ms-50ms
Time Accuracy	0.001-100ms/1us 100 -1000ms/10us 1-100s/1ms
Lv Mode	
Voltage Range	5-500vdc/±1v
Capacitance	25-3275uf /25uf
Parallel Resistor	50-2000Ω Step By 50Ω ,Or ∞
Pulse Timeconstant	1.25ms-6.55s
Time Accuracy	0.001-100ms/1us 100 -1000ms/10us 1-100s/1ms
Power Supply Mode	Single Boost Mode
Safety	The Unique Circuit Design Prevents The Generation Of Electrical Sparks, Ensuring The Repeatability Of Experiments And Protecting The Sample. When The Pulse Or Circuit Is Interrupted, It Can Safely Discharge Automatically

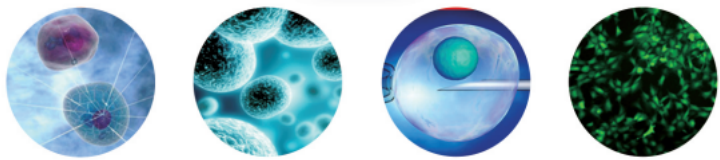
STEP



SSTEP 1:Eukaryotic suspension cells SSTEP 2:Add cells into the electrode cup SSTEP 3 3Electroporation pulse SSTEP 4:Analyze gene expression results

Applications



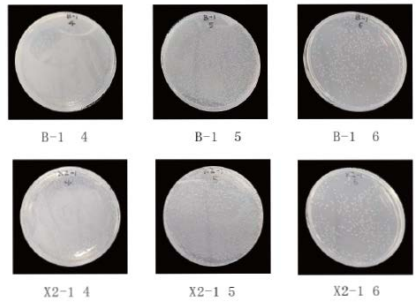


Application Examples

Sample：E. coli、C012 plasmid(Amp,~5 kb,4μg)

Electric conversion conditions：1.8 kV,600 Ω, 10μF, Electric conversion time~5.2 ms

The transformed products after recovery are subjected to gradient dilution, take10^{-4}、10^{-5} gentle10^{-6} Three separate coatings LB-Amp tablet, 32℃ over night culture。



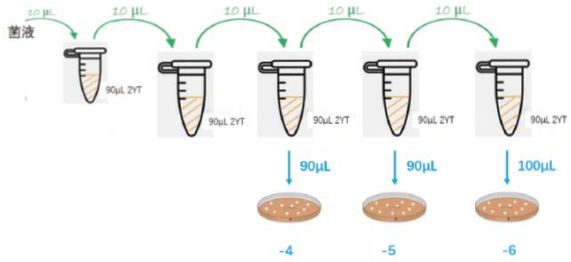


Fig. B-1, 10^{-6} dilution gradient~603 clones, average of 6.0×10^8 transformants/μg DNA
X2-1, 10^{-6} dilution gradient~689 clones, average of 6.8×10^8 transformants/μg DNA

References

1. Kubiniec RT, Liang H, Hui SW: Effect of pulse length and pulse strength on transfection by electroporation. BioTechniques 1990, 8:16-20.

2. Watanabe SY, Albsoul-Younes AM, Kawano T, Itoh H, Kaziro Y, Nakajima S,Nakajima Y: Calcium phosphate-mediated transfection of primary cultured brain neurons using GFP expression as a marker: application for single neuron electrophysiology. Neurosci Res 1999, 33:71-78.

3. Teissie J, Golzio M, Rols MP: Mechanisms of cell membrane electropermeabilization: a minireview of our present knowledge. Biochim Biophys Acta 2005, 1724:270-280.

4. Mir LM, Bureau MF, Gehl J, Rangara R, Rouy D, Caillaud JM, Delaere P,Branellec D, Schwartz B, Scherman D: High-efficiency gene transfer into skeletal muscle mediated by electric pulses. Proc Natl Acad Sci USA 1999, 96:4262-4267.

5. Colleoni S, Donofrio G, Lagutina I, Duchi R, Galli C, Lazzari G:Establishment, differentiation, electroporation, viral transduction, and nuclear transfer of bovine and porcine mesenchymal stem cells. Cloning Stem Cells 2005, 7:154-165.

6. Peister A, Mellad JA, Wang M, Tucker HA, Prockop DJ: Stable transfection of MSCs by electroporation. Gene Therapy 2004, 11:224-228.

7. Ahmed S, Reynolds BA, Weiss S: BDNF enhances the differentiation but not the survival of CNS stem cell-derived neuronal precursors. J Neurosci 1995, 15:5765-5778.

8. Lu P, Jones LL, Tuszynski MH: BDNF-expressing marrow stromal cells support extensive axonal growth at sites of spinal cord injury. Exp Neurol 2005, 191:344-360.

威尼德生物科技（北京）有限公司
V-LEADER BIOTECHNOLOGY(BEIJING)CO.,LTD

phone：15300013623
email：weneed2022@126.com
URL：www.bio-vleader.com
address：1-4201 Guodian Village East, Yongledian Town, Tongzhou District, Beijing (United Airlines Dali)