

Replaceable Flow Channel Membrane Electrode Assembly Electrochemical Cell Mea Electrolyzer For Pem Water Electrolysis And Carbon Dioxide Reduction Research

Item Number: PL-DJ32



Introduction

This high-performance replaceable flow channel MEA electrochemical cell features highly customizable serpentine channels starting from 0.1 mm thickness, engineered specifically for optimizing mass transport control in advanced PEM water electrolysis and carbon dioxide reduction processes.

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Application	Description	Key Benefit
PEM Water Electrolysis	Evaluating novel anode/cathode catalysts and proton exchange membranes under high-purity conditions.	Chemical inertness of the fluoropolymer body eliminates metal leaching, ensuring accurate catalyst lifetime assessments.
Carbon Dioxide Electroreduction	Investigating gas diffusion electrodes (GDE) for the conversion of carbon dioxide to value-added chemicals.	Fine control over flow channel thickness down to 0.1 mm dramatically reduces mass transport limitations for gas-phase reactants.
Fuel Cell Development (PEMFC)	Testing MEA configurations, water management strategies, and gas distribution efficiency under simulated load cycles.	Easily swappable flow plates enable direct, side-by-side comparison of different flow field geometries on water evacuation.
Redox Flow Batteries	Benchmarking active redox species, membrane crossover rates, and electrode materials in liquid-phase flow configurations.	High resistance to corrosive acid electrolytes prevents degradation of the cell body, maintaining test repeatability.
Electrochemical Organic Synthesis	Utilizing flow-through chemistry for synthesis of fine chemicals and pharmaceutical precursors under controlled mass transport.	Complete material compatibility with organic solvents allows safe handling of aggressive reaction mixtures.

Parameter	Specification Details for PL-DJ32
Model Number	PL-DJ32
Flow Channel Thickness	≥ 0.1 mm (Highly customizable based on experimental requirements)
Standard Flow Path Geometry	Serpentine flow path (Parallel, interdigitated, and blank plates available)
Cell Body Material	High-Purity PTFE / PFA (Optional PEEK or Titanium housings available)
Flow Plate Options	High-density graphite, gold-plated titanium, 316L stainless steel, or PTFE
Active Area Size	5 cm ² , 10 cm ² , 25 cm ² , or custom sizes up to 100 cm ²
Fluid Connection Interfaces	Standard 1/4" NPT fittings or double-ferrule compression tube fittings
Gasket Materials	FKM (Viton), pure PTFE, or silicon-based sealing gaskets
Electrical Current Collectors	Gold-plated copper plates with standard 4mm banana jack terminals
Operating Temperature Range	Ambient to 150°C (Material-dependent configuration)
Maximum Operating Pressure	Up to 0.6 MPa (Custom high-pressure variants available upon request)