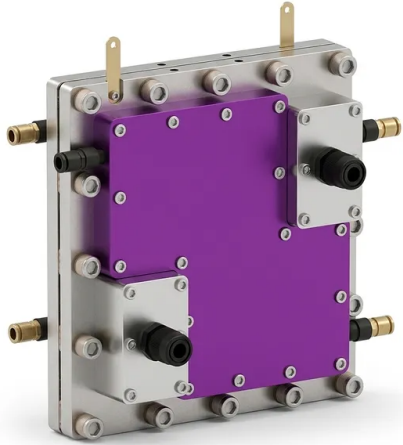


# Water Cooled Temperature Controlled Membrane Electrode Assembly Electrolysis Cell Titanium Serpentine Flow Plates

Item Number: PL-DJ29



## Introduction

This advanced water-cooled temperature-controlled membrane electrode assembly electrolysis cell features high-purity titanium flow plates and a serpentine design, engineered to deliver precise thermal management, minimal resistance, and exceptional efficiency for demanding B2B electrochemical laboratory research systems.

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Application	Description	Key Benefit
<b>PEM Water Electrolysis Testing</b>	Characterizing proton exchange membranes and catalyst coated membranes (CCMs) under variable temperature profiles.	Eliminates thermal gradients across the active area to yield true kinetic data.
<b>AEM Electrolyzer Development</b>	Evaluating novel anion exchange membranes and non-precious metal catalysts in alkaline environments.	High-purity titanium plates resist alkaline corrosion while maintaining low ohmic drop.
<b>Electrochemical CO2 Reduction</b>	Converting carbon dioxide into synthetic fuels (syngas, ethylene, formic acid) using gas diffusion electrodes.	Precise shear-force channels promote rapid mass transport of gaseous reactants and liquid products.
<b>Unitized Regenerative Fuel Cells</b>	Testing systems designed to operate alternately in electrolysis and fuel cell mode within a single hardware setup.	Fast temperature transitions via the dual heating/cooling system optimize mode-switching research.
<b>Accelerated Stress Testing (AST)</b>	Conducting long-duration stability and degradation trials under high current densities and elevated temperatures.	High mechanical stability and robust sealing sustain 1.0 MPa pressures over thousands of hours.
<b>Specialty Electrosynthesis</b>	Synthesizing highly pure chemical precursors and oxidants directly at the anode or cathode.	Detachable current collectors and titanium flow plates ensure contamination-free product collection.

Parameter	Specification Details for Model PL-DJ29
<b>Model Number</b>	PL-DJ29
<b>Active Channel Dimensions</b>	100 mm × 100 mm (100 cm <sup>2</sup> active reaction area)
<b>Flow Plate Material</b>	High-Purity Titanium (Cathode and Anode sides)
<b>Thermal Management System</b>	Dual-control: Constant temperature liquid jacket + heating rod & thermocouple
<b>Temperature Control Modes</b>	Active liquid water cooling & electrical resistance heating
<b>Flow Field Configuration</b>	Multi-channel serpentine large-circulation flow design
<b>Fluid Dynamic Enhancement</b>	Integrated shear-force geometry for boundary layer mitigation
<b>Maximum Operational Pressure</b>	Up to 1.0 MPa (~10 bar) when paired with compatible high-pressure pumps
<b>Electrical Terminals</b>	Detachable copper lugs with heavy gold plating
<b>Sealing System</b>	High-performance custom elastomeric / fluoropolymer gaskets
<b>Connection Ports</b>	Standard high-pressure fluidic and thermal sensor connections
<b>Compatibility</b>	Suitable for PEM, AEM, and custom multi-layer membrane assemblies