

## Electrochemical Product Catalogue



Electrode

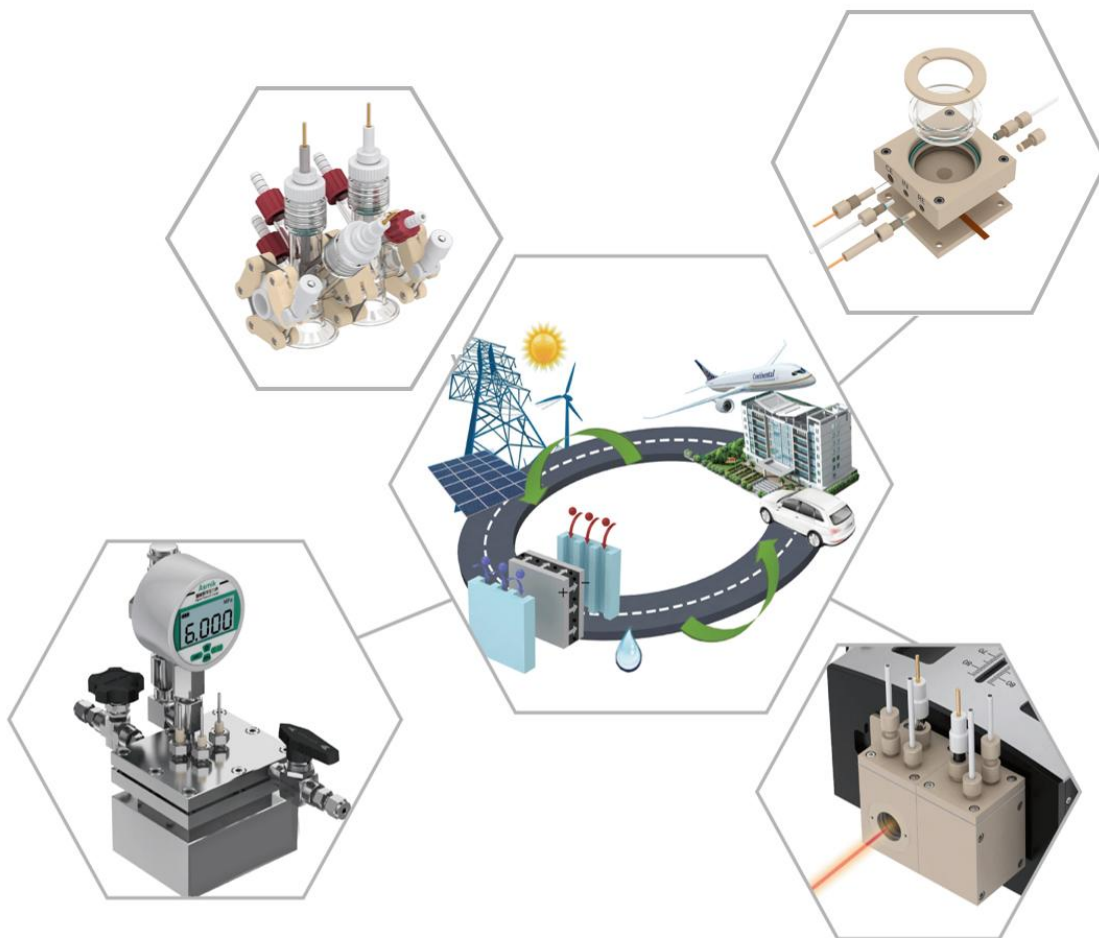
Electrochemical Cells

In-Situ Testing Cells

Flow Cells

Pressure Cells

## Electrochemical Product Catalogue Electrode



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## Reference Electrodes



### Ag/AgCl Electrode

- Ag/AgCl electrode is often used in neutral systems (filled with saturated KCl solution)
- In case of acid-base system, please increase the use of salt bridge



Saturated Calomel Electrode

### Saturated Calomel Electrode

- Saturated calomel electrode is often used in neutral systems (filled with saturated KCl solution)
- In case of acid-base system, please increase the number of salt bridge used



### Hg/HgO Electrode

- Hg/HgO electrode is often used in basic systems (filled with 1 M KOH solution)
- If the concentration of alkaline solution is greater than 1 M, please increase the use of salt bridge

### Hg<sub>2</sub>SO<sub>4</sub> Electrode

- Hg<sub>2</sub>SO<sub>4</sub> Electrode is often used in acidic systems (filled with saturated K<sub>2</sub>SO<sub>4</sub> solution)





### Ag/Ag<sup>+</sup> Electrode

•Ag/Ag<sup>+</sup> Electrode is used in organic solution system



### Salt Bridge

- Effectively reduce resistance
- Cross mix application can effectively protect electrodes
- Salt bridge filling solution: the salt bridge filling solution is related to the reference electrode, which is basically the same as the reference electrode filling solution, but when used to avoid chloride ions, the salt bridge filling solution is saturated KNO<sub>3</sub> solution

### Product Code

Name	Model	Body Material	Diameter (mm)	Total Length (mm)
Ag/AgCl Electrode	R1038	Glass	3.8	85.0
	R1060-regular	Glass	6.0	110.0
	R1060-lengthen	Glass	6.0	155.0
	R2060	PTFE	6.0	75.0
	R8060 (double-salt-bridge)	Glass	6.0	110.0
	PK-1020 (leakless)	PEEL	2.0	115.0
	PK-1038 (leakless)	PEEK	2.0	115.0
Saturated Calomel Electrode	232	Glass	5.0	135.0
	217 (double-salt-bridge)	Glass	5.0	135.0
	1545	Glass	5.0	105.0
Hg <sub>2</sub> SO <sub>4</sub> Electrode	standard	Glass	6.0	85.0
Hg/HgO Electrode	single-salt-bridge	Glass	6.0	140.0
	double-salt-bridge	Glass	5.0	130.0
	PK-Hg/HgO	PEEK	3.8	140.0
Ag/Ag <sup>+</sup> Electrode	4038	Glass	3.8	85.0
	4060	Glass	6.0	85.0

The above-mentioned dimensions are standard; customization can be done upon request.

## Standard Hydrogen Reference Electrode

### Standard Hydrogen Reference Electrode

- Easy to replace and provides hydrogen to the electrode
- The hydrogen electrode has no internal electrolyte, so there is no ion exit and no diffusion potential
- No electrolyte replenishment required
- The hydrogen electrode does not contain toxic/heavy metals. Can be used in high concentration fluorinated media as it is made of PTFE
- Very effective in highly concentrated alkaline and acidic media (pH2 to pH16)

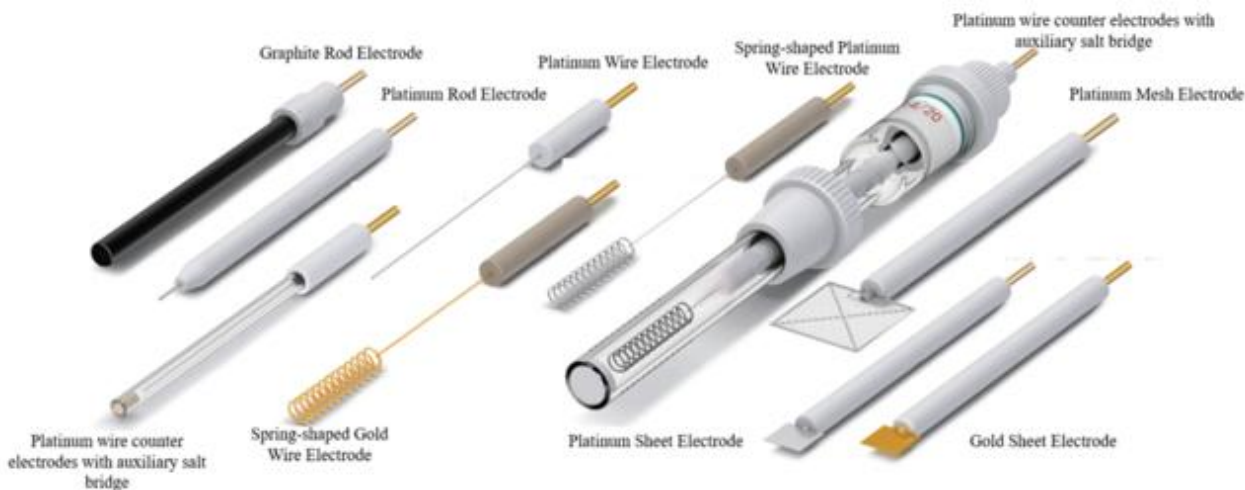


Name	Product ID
Standard Hydrogen Electrode	10101
Standard hydrogen electrode sand core	10101-1
Standard hydrogen electrode salt bridge	10101-2
<u>All sizes are common sizes.</u> <u>Customization is available upon request</u>	

## Counter Electrodes

### Counter Electrode Instructions

- Platinum sheet electrode: thickness 0.1-0.5mm, specification 5\*10, 10\*10, 10\*15, 10\*20, 15\*15, 15\*20, 20\*20, 20\*25, 25\*25, 30\*30 (in the unit of mm)
- Platinum mesh electrode: mesh 52, specification 10\*10, 20\*20, 30\*30 (in the unit of mm)
- Platinum wire electrode: specification 0.5\*37, 1\*37, 1\*5, 1\*10, 0.5\*230 (in the unit of mm) front spring diameter 4mm
- Gold wire electrode: specification 0.5\*230mm, front spring diameter 4mm
- Graphite electrode: specification 6\*75mm



### Platinum Wire/Rod Electrode

Name	Product ID	Specifications (mm)
Platinum Wire Electrode	PT0537	φ0.5*37mm
Platinum Wire Electrode	PT1037	φ1.0*37mm
Platinum Wire Electrode	PT0523	φ0.5*230mm
Salt Bridge Platinum Wire Electrode	PT052300	φ0.5*230mm
Platinum Rod Electrode	PT1005	φ1.0*5mm
Platinum Rod Electrode	PT1010	φ1.0*10mm

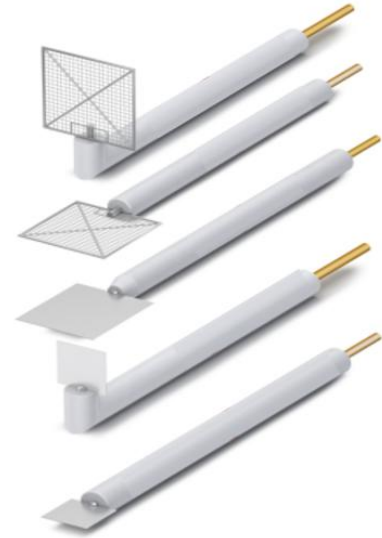
All sizes are common sizes and can be customized upon request

### Platinum Mesh Electrode

Product ID	Specifications (mm)
Pt 0510	5*10
Pt 1010	10*10
Pt 1015	10*15
Pt 1020	10*20
Pt 1030	10*30
Pt 1515	15*15
Pt 2020	20*20
Pt 3030	30*30
Pt-R20	Φ20

All sizes are common sizes and can be customized upon request.

**Mesh number of platinum mesh : #52**



### Platinum Sheet Electrode

Product ID	Specifications (mm)
Pt 0505-1	5*5*0.1
Pt 0505-2	5*5*0.2
Pt 0505-3	5*5*0.3
Pt 0510-1	5*10*0.1
Pt 0510-2	5*10*0.2
Pt 0510-3	5*10*0.3
Pt 1010-1	10*10*0.1
Pt 1010-2	10*10*0.2
Pt 1010-3	10*10*0.3
Pt 1010-5	10*10*0.5
Pt 1015-1	10*15*0.1
Pt 1015-2	10*15*0.2
Pt 1015-3	10*15*0.3
Pt 1015-5	10*15*0.5
Pt 1020-1	10*20*0.1
Pt 1020-2	10*20*0.2
Pt 213	5*2*0.2

Product ID	Specifications (mm)
Pt 1020-3	10*20*0.3
Pt 1020-5	10*20*0.5
Pt 1030-1	10*30*0.1
Pt 1030-2	10*30*0.2
Pt 1030-3	10*30*0.3
Pt 1030-5	10*30*0.5
Pt 1515-1	15*15*0.1
Pt 1515-2	15*15*0.2
Pt 1515-3	15*15*0.3
Pt 1515-5	15*15*0.5
Pt 2020-1	20*20*0.1
Pt 2020-2	20*20*0.2
Pt 2020-3	20*20*0.3
Pt 2020-5	20*20*0.5
Pt 3030-1	30*30*0.1
Pt 3030-2	30*30*0.2
Pt 3030-2	30*30*0.3



### Graphite Rod Counter Electrode

Name	Specifications (mm)	Purity
Graphite Rod Electrode (Japan)	$\varphi 3 \sim 6 \times 75 \text{mm}$	99.99%
Graphite Rod Electrode (China)	$\varphi 3 \sim 6 \times 75 \text{mm}$	98%
Bare Graphite Rod (Japan)	$\varphi 3 \sim 6 \times 75 \text{mm}$	99.99%
Bare Graphite Rod (China)	$\varphi 3 \sim 6 \times 75 \text{mm}$	98%

The length of the graphite rod can be customized according to the requirements

# Working Electrodes

## Different Configurations



Standard Working Electrode



L-shaped Electrode



T-shaped Working Electrode



Electron Microscope Electrode



Magnetic Electrode



Multifunctional Combination Electrode

1	Standard Electrode
2	L-shaped Electrode
3	T-shaped Electrode
4	Electron Microscope Electrode
5	Magnetic Electrode
6	Multifunctional Combination Electrode

## Working Electrodes

### Different Materials

Name	Specifications (mm)	Name	Specifications (mm)
Glassy Carbon Electrode (USA)	1mm	Glassy Carbon Electrode (Japan)	1mm
	2mm		2mm
	3mm		3mm
	4mm		4mm
	5mm		5mm
	6mm		6mm
			7mm
	8mm		
	9mm		
	10mm		
	15mm		
	20mm		
Platinum Disk Electrode <99.99%>	0.5mm	Gold Disk Electrode <99.999%>	0.5mm
	1mm		1mm
	2mm		2mm
	3mm		3mm
	4mm		4mm
	5mm		5mm
	6mm		6mm
Silver Disk Electrode	2mm	Mercury Film Silver based Electrode Hg(Ag)FE	2*10mm
	3mm	Cadmium Electrode	2mm
	4mm	Titanium Electrode	2 ~ 4mm
	5mm	Palladium Electrode	3mm
	6mm		
Pyrolytic Graphite Electrode	2 ~ 6mm	Graphite Electrode	2 ~ 6mm
Isotropic Carbon Graphite Electrode	2 ~ 4mm	Zinc Electrode	2 ~ 4mm
Nickel Electrode	2 ~ 4mm	Copper Electrode	2 ~ 4mm
Carbon Paste Electrode (Not Adjustable)	2 ~ 4mm	Carbon Paste Electrode (Adjustable)	2 ~ 4mm
Tungsten Electrode	2 ~ 4mm	Iron Electrode	2 ~ 4mm
Carbon Steel Electrode	2~5mm	Stainless Steel Electrode	2~5mm

## Electrode Clamp Series

### Electrode Clamp

- The metal electrode clamp is manufactured in one piece, such as stainless steel, copper, and titanium.
- The insulating materials used are high purity PTFE and PEEK.
- The electrode clamp employs materials such as platinum, gold, and glassy carbon.



Name	Specifications
Stainless Steel Electrode Clamp	sus-1 (316F)
	sus-2 (PTFE shell )
	sus-X
Platinum Sheet Electrode Clamp	PT-1
	PT-2
	PT-3
	PT-X
Glassy Carbon Electrode Clamp	GC-2
	Special Electrode Clamp for Glassy Carbon Sheet (PEEK)
	GC-1010 (PTFE)
Titanium Electrode Clamp	TI-3
	TI-X

## Rotating Disk (Ring Disk) Electrode

### Rotating Disk/Ring Disk Electrode

- Glassy carbon electrode: glassy carbon is manufactured in the USA or Japan
- Gold electrode: 99.999% purity
- Platinum electrode: 99.999% purity
- Other electrodes available: silver, palladium, zinc, aluminum, iron, nickel, titanium, tungsten, molybdenum, tantalum, stainless steel, carbon steel and other electrodes
- Pyrolytic Graphite Electrode: Highly Oriented Pyrolytic Graphite (HOPG)

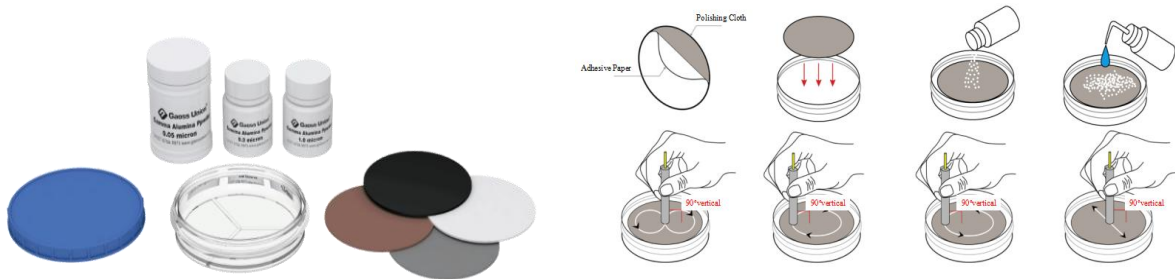


Product ID	Specifications
Rotating Disk Electrode (Compatible with the US made glassy carbon) (External thread & internal thread)	GC (glassy carbon) 5mm
	AU (gold) 5mm
	PT (platinum) 5mm
Rotating Disk Electrode (Compatible with the Japan made glassy carbon)	GC (glassy carbon) 3, 4, 5mm
	AU (gold) 3, 4, 5mm
	PT (platinum) 3, 4, 5mm
Rotating Ring Disk Electrode (Compatible with the US made glassy carbon) (External thread)	GC (glassy carbon) 5.6mm
	AU (gold) 5.6mm
	PT (platinum) 5.6mm
Rotating Ring Disk Electrode (Compatible with the Japan made glassy carbon)	GC (glassy carbon) 4mm
	AU (gold) 4mm
	PT (platinum) 4mm
Rotating Electrode Clamp	
Electric Rotary Dispenser	

**All RDEs can be customized for high temperature (up to 300°) electrodes or electron microscope electrodes.**

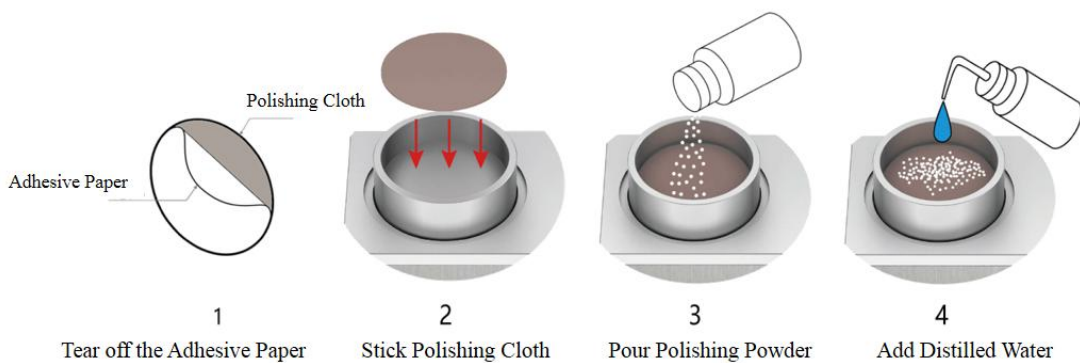
# Electrode Polishing Series

## Manual Polishing



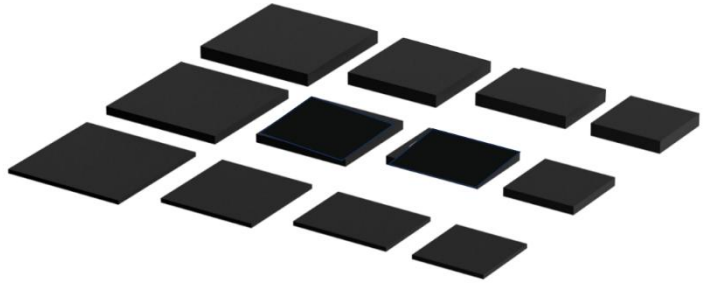
## Electric Polishing

- Set up the electrode polisher, attach the polishing cloth, add 0.05µm polishing powder, dampen with distilled water to form a paste.
- Turn on the polishing machine and run at maximum speed. Hold the electrode vertically over the pad with proper pressure. After 20 seconds, polish is done. Rinse electrode with distilled water.
- On the electrochemical workstation, choose cyclic voltammetry and test the electrode in standard potassium ferricyanide solution. A peak difference of around 70 confirms electrode qualification.
- Use two clean beakers, place A with absolute ethanol and B with Type II deionized water. Submerge the electrodes in A and then B, conducting ultrasonic cleaning for up to 60 seconds. Remove and air dry the electrode for future use.
- In case of electrode modification, invert the electrode onto an electrode drying rack for drop-coating.



## Glassy Carbon Sheet

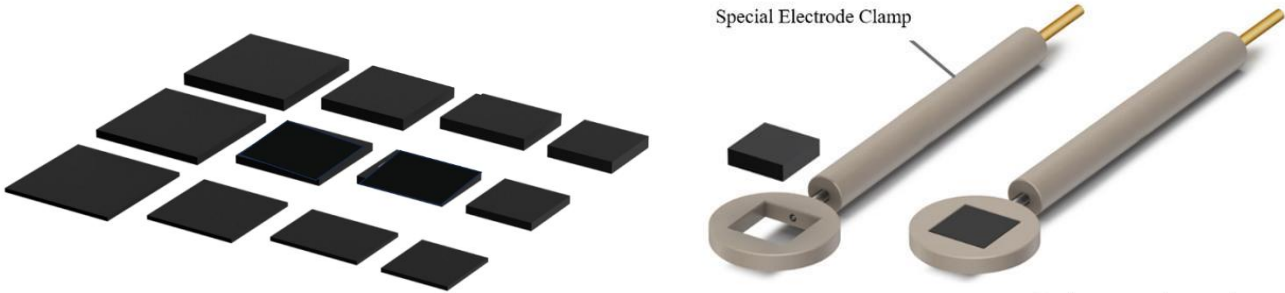
- Glassy carbon sheet size: 10\*10mm, 15\*10mm, 20\*10mm, 25\*10mm, 15\*15mm, 20\*15mm, 20\*20mm, 25\*25mm
- Glassy carbon sheet thickness: 3mm, 2mm, 1mm
- Country of Origin: US, Japan
- The effect is better when used with special electrode clamps



Product ID	Specifications (mm)	Product ID	Specifications (mm)
GC1010-1	10*10*1	GC1515-1	15*15*1
GC1010-2	10*10*2	GC1515-2	15*15*2
GC1010-3	10*10*3	GC1515-3	15*15*3
GC1015-1	10*15*1	GC1520-1	15*20*1
GC1015-2	10*15*2	GC1520-2	15*20*2
GC1015-3	10*15*3	GC1520-3	15*15*3
GC1020-1	10*20*1	GC2020-1	20*20*1
GC1020-2	10*20*2	GC2020-2	20*20*2
GC1020-3	10*20*3	GC2020-3	20*20*3
GC1025-1	10*25*1	GC2525-1	25*25*1
GC1025-2	10*25*2	GC2525-2	25*25*2
GC1025-3	10*25*3	GC2525-3	25*25*3
All sizes are common sizes and can be customized upon request			

## Graphite Sheet

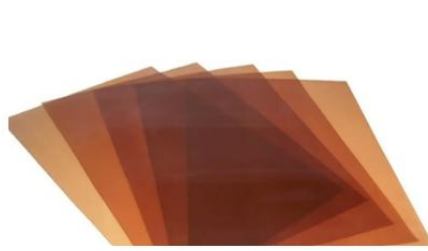
- Graphite sheet size: 10\*10mm, 15\*10mm, 20\*10mm, 25\*10mm, 15\*15mm, 20\*15mm, 20\*20mm, 25\*25mm
- Graphite sheet thickness: 3mm, 2mm, 1mm
- Origin: US, JP
- The effect is better when used with specially designed electrode clamps



Product ID	Specifications (mm)	Product ID	Specifications (mm)
1010-1	10*10*1	1515-1	15*15*1
1010-2	10*10*2	1515-2	15*15*2
1010-3	10*10*3	1515-3	15*15*3
1015-1	10*15*1	1520-1	15*20*1
1015-2	10*15*2	1520-2	15*20*2
1015-3	10*15*3	1520-3	15*15*3
1020-1	10*20*1	2020-1	20*20*1
1020-2	10*20*2	2020-2	20*20*2
1020-3	10*20*3	2020-3	20*20*3
1025-1	10*25*1	2525-1	25*25*1
1025-2	10*25*2	2525-2	25*25*2
1025-3	10*25*3	2525-3	25*25*3

## Ion Exchange Membrane

Name	Product ID	Size	Country of Origin
Cation Exchange Membrane	Nafion 115	100*100mm	US, Dupont
	Nafion 117	100*100mm	US, Dupont
	Nafion 211	100*100mm	US, Dupont
Anion Exchange Membrane	Fuma-FAA-3-PK-130	100*100mm	Germany



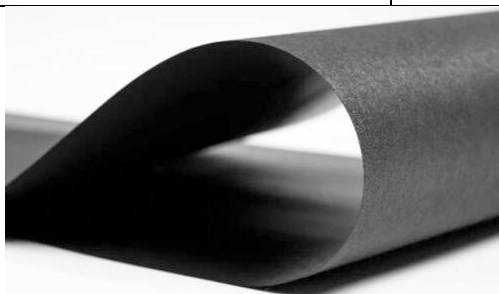
Fumatech



Nafion

## Carbon Paper & Carbon Cloth

Name	Product ID	Size
Hydrophobic Carbon Paper (DE)	SGL22BB	100*100mm
Hydrophilic Carbon Paper (Taiwan)	CDS180S	100*100mm
Hydrophobic Carbon Cloth (Taiwan)	W1S1010	400*400mm
Hydrophilic Carbon Cloth (Taiwan)	W0S1009	400*400mm
PTFE Membrane		100*100mm



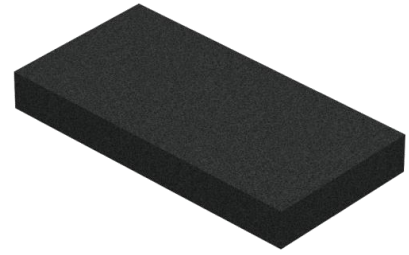
SGL22BB



W1S1011

## Mesh Glass Carbon (RVC)

Name	Size	Remark
Mesh Glass Carbon (RVC)	100*50*10mm	100PPI
	100*100*10mm	100PPI



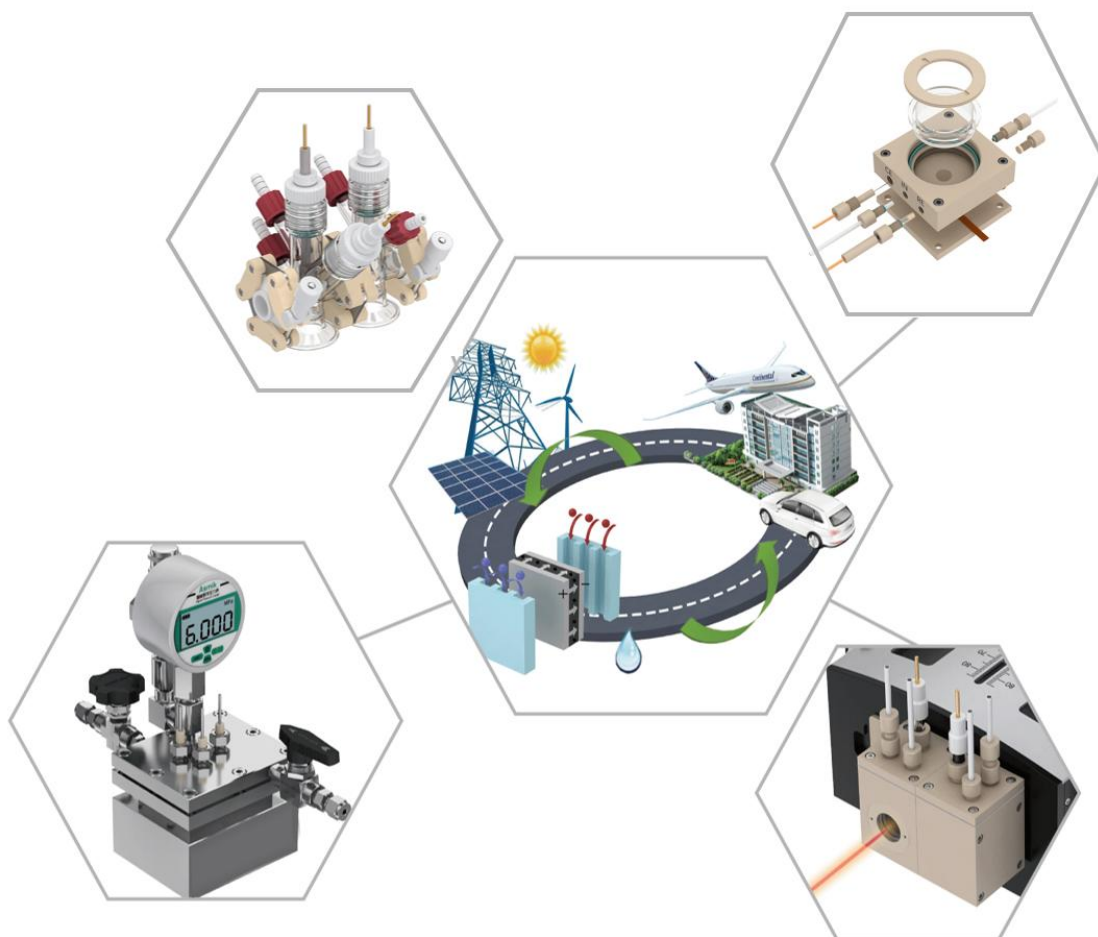
## Metal Foam

Name	Size	Thickness
Copper Foam	210*295mm	0.5mm
Nickel Foam	210*295mm	0.5mm



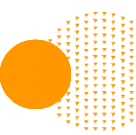
# Electrochemical Product Catalogue

## Electrochemical/Electrolytic Cells

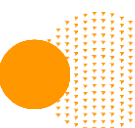




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## Single Chamber Glass Electrolytic Cell Series

### Variable Diameter Electrolytic Cell (Non-Sealed) Model: C001



- Cell Material: High purity borosilicate glass.
- Commonly used in three-electrode systems, with a volume ranging from 30ml to 500ml, customizable based on requirements.
- The single-cell opening of the electrolytic cell employs a flanging design to enhance stability.
- The electrolytic cell is equipped with variable diameter electrode holes (diameters: 6.5mm, 8.5mm, 10.5mm, 12.5mm) for easy matching with electrodes of different diameters.
- Additional features include the option to add a salt bridge or gas vent as needed.
- Inlet and outlet gas ports can be added to the electrolytic cell for atmospheric control based on experimental requirements.
- Available in single-layer and jacketed-layer configurations, with the jacketed-layer version incorporating a constant temperature water bath function. The constant temperature effect is achieved by continuously circulating temperature-controlled water in the jacket layer of the electrolytic cell.
- The electrodes of the electrolytic cell need to be purchased separately.

Volume (mL)	Single layer	Jacketed
30mL		
50mL		
100mL		
150mL		
250mL		
300mL		
500mL		

All sizes listed are common sizes, can be customized according to requirements.

## Single Chamber Glass Electrolytic Cell Series

### Straight Five-Port Electrolytic Cell Model: C002-1



- Cell Material: High purity borosilicate glass.
- The electrolytic cell is a relatively sealed system commonly used in three-electrode systems, with a volume ranging from 30ml to 500ml, customizable based on requirements.
- The glass portion of the electrolytic cell achieves sealing between the cell and the cover through the screw-pressed O-ring on the cover. The electrode section also achieves sealing through sealed screws and compressed O-rings.
- The electrolytic cell is equipped with either a sand core salt bridge or a Luggin capillary.
- It features inlet and outlet gas ports with an aeration device for gas inlet, providing atmospheric control based on experimental needs.
- The jacketed-layer electrolytic cell includes a constant temperature water bath function, achieving a constant temperature effect by circulating temperature-controlled water within the cell for the measured solution.
- The cover material of the electrolytic cell is polytetrafluoroethylene (PTFE), with the size of the inner screw cover varying based on the cell's volume, typically ranging from 35mm, 50mm, 60mm, to 70mm in diameter.
- The electrodes of the electrolytic cell need to be purchased separately.

Volume (mL)	Opening Diameter	Volume (mL)	Opening Diameter	Single layer	Jacketed
30mL	50mm	200mL	60 mm		
50mL	50 mm	250mL	70 mm		
100mL	50 mm	500mL	70 mm		
150mL	60 mm	1000mL	70 mm		

All sizes listed are common sizes, can be customized according to requirements.

## Single Chamber Glass Electrolytic Cell Series

### Straight Five-Port Electrolytic Cell Model: C002-2



- Cell Material: High purity borosilicate glass.
- The electrolytic cell is part of an absolutely sealed system commonly used in three-electrode systems, with a volume ranging from 10ml to 500ml, customizable based on requirements.
- The electrode section of the electrolytic cell achieves internal insertion and extraction of electrodes through a headphone jack on the cover, ensuring absolute sealing in the three-electrode system.
- The electrodes must be matched with the cell body. The electrodes need to be purchased separately.
- Salt bridges or Luggin capillaries cannot be added to this electrolytic cell; only a Ag/AgCl reference electrode can be used.
- Atmosphere protection is achieved through added valves and an aeration device. The valve connected to the aeration device controls the direction of gas inlet.
- This electrolytic cell, as part of an absolute sealing system, can be subjected to vacuum (less than -100kPa) or pressure by using valves. Pressurization requires a rounded bottom shape, and the pressure should not exceed 0.5MPa for safety.
- Due to process limitations, **pressurization is prohibited in jacketed-layer electrolytic cells**, as the inner glass walls are relatively thin.
- The jacketed-layer electrolytic cell includes a constant temperature water bath function, maintaining a constant temperature in the measured solution by circulating temperature-controlled water.

Volume (ml)	Opening Diameter	Volume (ml)	Opening Diameter	Single layer	Jacketed
10mL	17mm	200mL	60 mm		
30mL	50 mm	250mL	70 mm		
50mL	50 mm	500mL	70 mm		
100mL	50 mm	1000mL	70 mm		
150mL	60 mm				

All sizes listed are common sizes, can be customized according to requirements.

## Single Chamber Glass Electrolytic Cell Series

Multifunctional Electrolytic Cell Model: C003



- Cell Material: High purity borosilicate glass.
- Cover: Polytetrafluoroethylene (PTFE).
- The electrolytic cell's sheet-like working electrode is detachable for easy handling.
- This electrolytic cell is suitable for electrochemical experiments before scanning electron microscopy, corrosion testing, photoelectric experiments, and magnetic electrode experiments. It is single-layered, temperature-controlled, nitrogen-deoxygenated, and vacuum-compatible.
- The volume of the electrolytic cell can be customized according to experimental requirements.
- The electrodes of the electrolytic cell need to be purchased separately.

Volume (mL)				
50mL	<b>Single layer Open Type</b>	<b>Single layer Sealed Type</b>	<b>Jacketed Open Type</b>	<b>Jacketed Sealed Type</b>
100mL				
150mL				
200mL				
250mL				

All sizes listed are common sizes, can be customized according to requirements.

## Single Chamber Glass Electrolytic Cell Series

### Traditional Five-Port Electrolytic Cell Model: C004



- Cell Material: High purity borosilicate glass.
- Configuration: Cell body, F-type gas inlet, salt bridge, liquid seal, polytetrafluoroethylene plug.
- This electrolytic cell is a relatively sealed system. Sealing between the cell and the cover is achieved through a frosted mouth and an inverted cone-shaped cover. If used with a rotating disk electrode and the sealing cannot be achieved, can increase the gas inlet amount above the liquid level for atmospheric protection.
- Commonly used in three-electrode systems, the electrolytic cell can also be customized based on requirements. The electrodes of the electrolytic cell need to be purchased separately.
- The electrolytic cell can be designed with a conical bottom, with a volume ranging from 5 to 25 mL. It is equipped with an F-type gas inlet that allows both upward and downward ventilation. Atmospheric protection is adjusted based on different experiments. Ventilation under the liquid level should be stopped when the experiment begins, retaining only the ventilation above the liquid level.
- The electrodes of this electrolytic cell need to be compatible. The electrode section of the electrolytic cell achieves sealing through sealed screws and compressed O-rings.
- Equipped with a salt bridge, the electrolytic cell brings the reference electrode closer to the working electrode, effectively reducing resistivity.
- Available in single-layer and jacket-layer configurations. The constant temperature is achieved by continuously circulating temperature-controlled water in the jacket layer of the electrolytic cell for the measured solution.

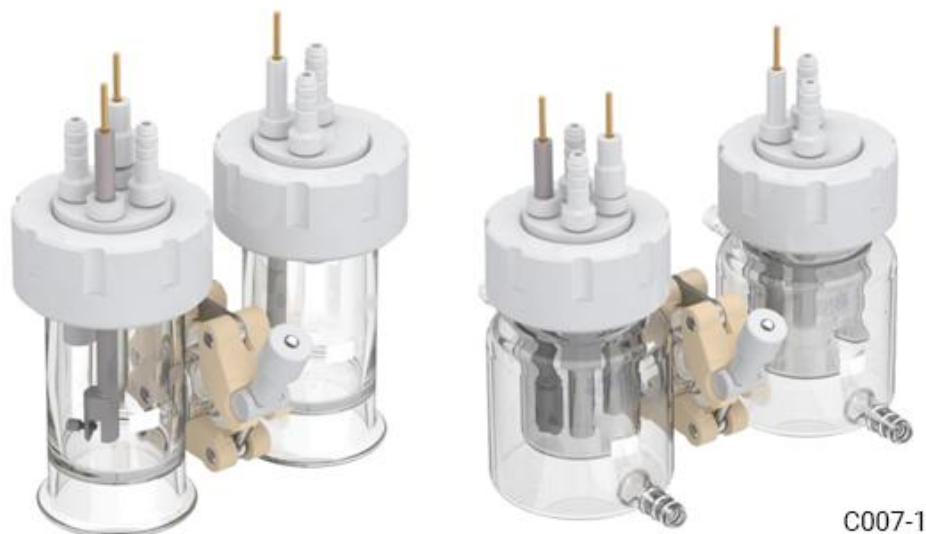
Volume (ml)		Volume (ml)		
5-20mL*		150mL	<b>Single layer</b>	<b>Jacketed</b>
25mL		250mL		
50mL		500mL		
100mL		1000mL		

All sizes listed are common sizes, can be customized according to requirements.

\*5-20mL are the cell with conical bottom.

## Replaceable Membrane Electrolytic Cell Series

### 2H Type Replaceable Membrane Electrolytic Cell (Relatively Sealed) Model: C007-1



- Cell Material: High purity borosilicate glass.
- This electrolytic cell is a relatively sealed system. The cathode chamber and anode chamber are isolated by an ion membrane (user-provided). The two chambers are sealed and linked using a chain for easy membrane replacement, effectively reducing the resistivity (R drop) with the reference electrode and working electrode in the same chamber. The glass sealing part of the electrolytic cell adopts an external threaded design, and the inner core uses 360-degree rotation of polytetrafluoroethylene for precise electrode alignment through tightening with a polyoxymethylene (POM) outer cover for sealing.
- The single-layer cell of this electrolytic cell has a special design to efficiently eliminate solution dead volume.
- The electrodes of the electrolytic cell need to be purchased separately.
- Commonly used in three-electrode systems, the electrolytic cell has a volume ranging from 30ml to 500ml and can be customized based on requirements. Electrodes must be dimensionally compatible with the cell. The electrode section sealing of the electrolytic cell is achieved on the PTFE plug. Sealing is accomplished by screws compressing O-rings.
- The electrolytic cell is equipped with an aeration device that allows ventilation below the liquid level. Gas bubbler can be adjusted based on different experiments, such as using a straight-type bubbler for carbon reduction or an L-shaped bubbler for nitrogen reduction.

Volume (ml)	Volume (ml)	Single layer	Jacketed
30mL	150mL		
50mL	200mL		
100mL	250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Replaceable Membrane Electrolytic Cell Series

### 2H Type Replaceable Membrane Electrolytic Cell (Absolutely Sealed) Model: C007-2



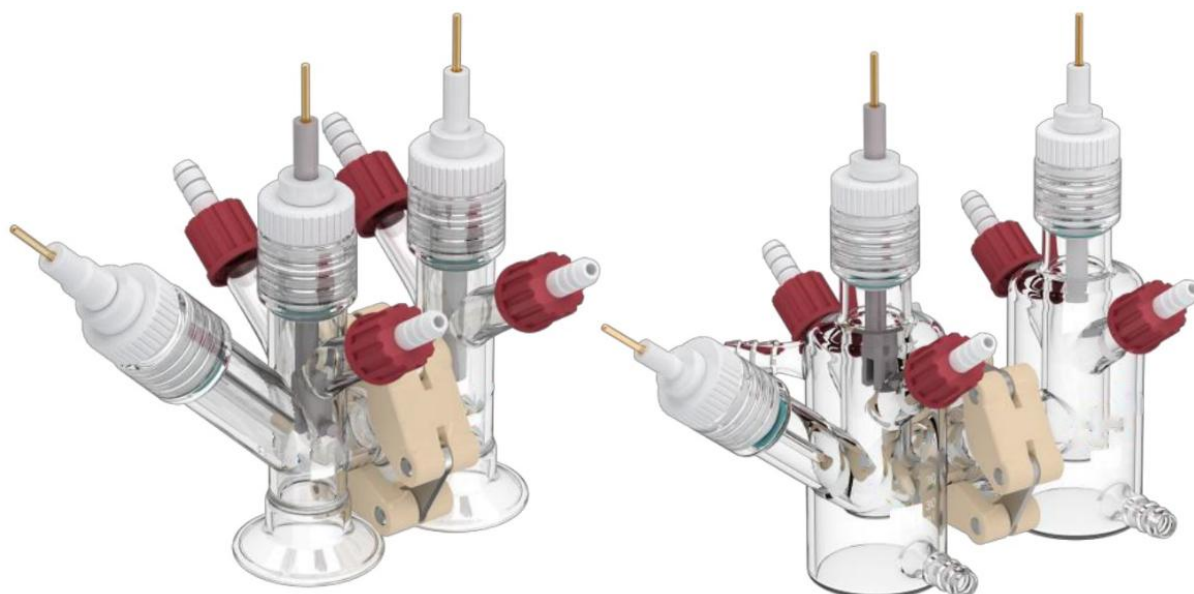
- Cell Material: High purity borosilicate glass.
- The electrolytic cell achieves atmospheric protection by adding valves and an aeration component.
- This electrolytic cell is an absolutely sealed system. The glass sealing part of the electrolytic cell adopts an external threaded design, and the inner core uses 360-degree rotation of polytetrafluoroethylene for precise electrode alignment through tightening with a polyoxymethylene (POM) outer cover for sealing. It can be subjected to vacuum (less than -100Kpa) and slight pressurization, with a maximum pressure not exceeding 0.5MPa for safety. The cathode chamber and anode chamber are isolated by an ion exchange membrane, and the two chambers are sealed and linked using a chain for easy membrane replacement. The reference electrode and working electrode are in the same chamber, effectively reducing the resistivity (R drop).
- The electrode section of the electrolytic cell achieves internal insertion and extraction of electrodes through a headphone jack on the cover, ensuring absolute sealing in the electrode system. Electrodes must be dimensionally compatible with the cell. The electrodes need to be purchased separately.
- The single-layer cell of this electrolytic cell has a special design to efficiently eliminate solution dead volume.
- The electrolytic cell is equipped with an aeration device that allows ventilation below the liquid level. Different shapes of aeration devices are chosen based on the experiment, such as using a straight-type bubbler for carbon reduction or an L-shaped bubbler for nitrogen reduction.
- The Jacketed cell allows circulating temperature-controlled water achieves a constant temperature effect in the measured solution.

Volume (ml)		Volume (ml)	Single layer	Jacketed
30mL		150mL		
50mL		200mL		
100mL		250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Replaceable Membrane Electrolytic Cell Series

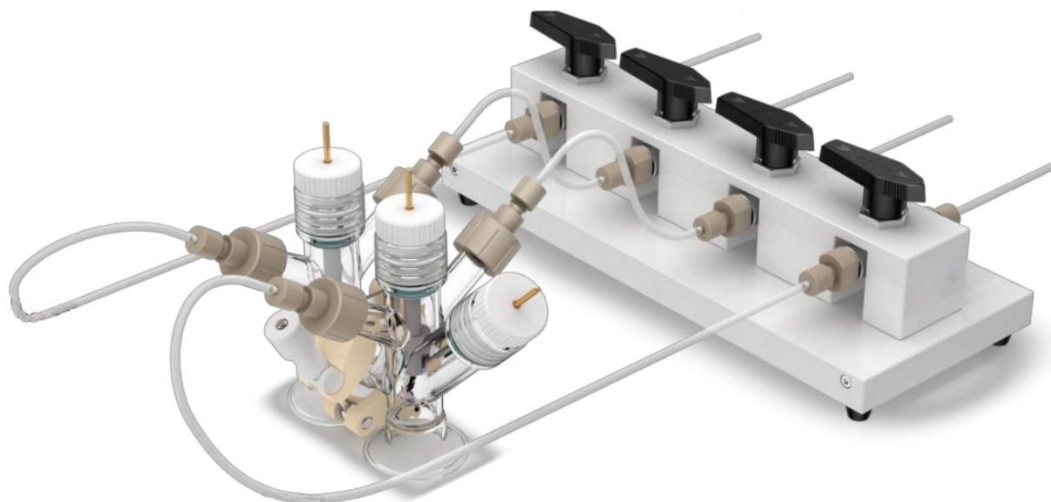
**Small Volume H-Type Replaceable Membrane Electrolytic Cell (Relatively Sealed)**  
**Model: C007-10**



- Cell Material: High purity borosilicate glass.
- Electrodes must be dimensionally compatible with the cell.
- The single-layer cell of this electrolytic cell has a special design to efficiently eliminate solution dead volume.
- Commonly used in three-electrode systems, the single-cell volume of the electrolytic cell is 10ml.
- The electrolytic cell is a relatively sealed system. The cathode chamber and anode chamber are isolated by an ion exchange membrane. The two chambers are sealed and linked using a chain for easy membrane replacement, with the reference electrode and working electrode in the same chamber, effectively reducing the resistivity (R drop).
- The glass sealing part of the electrolytic cell adopts an internal threaded design, achieving sealing by tightening polytetrafluoroethylene and compressing sealing rings.
- The electrode section of the electrolytic cell achieves sealing through screws compressing O-rings.
- The electrolytic cell can have a sampling port added to the cell body.
- The electrodes of the electrolytic cell need to be purchased separately.

## Replaceable Membrane Electrolytic Cell Series

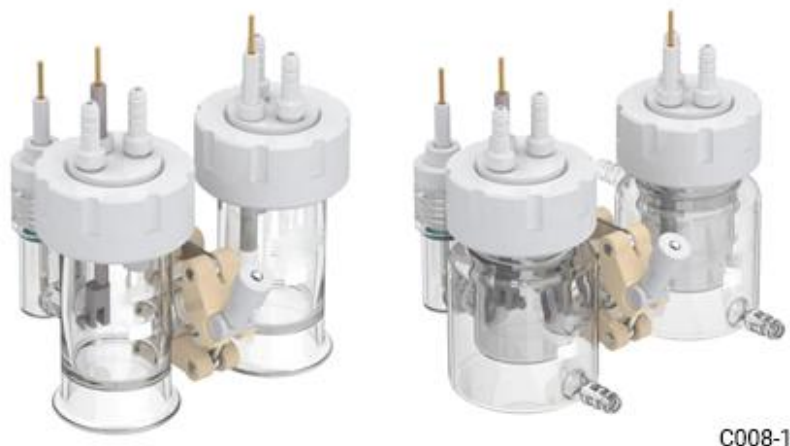
**Small Volume Replaceable Membrane Electrolytic Cell (Absolutely Sealed)  
Model: C007-10-2**



- Cell Material: High purity borosilicate glass.
- The working electrode, counter electrode, and reference electrode of this electrolytic cell must be compatible.
- The single-layer cell of this electrolytic cell has a special design with an overhead layer, effectively eliminating solution dead volume.
- Commonly used in three-electrode systems, the single-cell volume of the electrolytic cell is 10ml.
- This electrolytic cell operates on an absolutely sealed system. The cathode chamber and anode chamber are isolated by an ion membrane. The two chambers are sealed and linked using a chain for easy membrane replacement, with the reference electrode and working electrode in the same chamber, effectively reducing the resistivity (R drop).
- The absolute sealing of the electrode section in this electrolytic cell is achieved through a headphone jack on the polytetrafluoroethylene cover, allowing internal insertion and extraction of electrodes, ensuring absolute sealing in the electrode system.
- The electrolytic cell is equipped with an aeration device that allows ventilation below the liquid level, adjusting atmospheric conditions based on different experiments.
- A sampling port and valve control module can be added to this electrolytic cell.
- Valves can be added to this electrolytic cell, and all absolute seals are accomplished through quick connections. The polytetrafluoroethylene tube used for quick connections has a diameter of 3mm.
- The electrodes of the electrolytic cell need to be purchased separately.

## Replaceable Membrane Electrolytic Cell Series

### 3H Type Replaceable Membrane Electrolytic Cell (Relatively Sealed) Model: C008-1



- Cell Material: High purity borosilicate glass.
- This electrolytic cell separates the reference electrode and working electrode chambers, connected by a Luggin capillary, effectively reducing the resistivity (R drop). An agar-agar can be added inside the Luggin capillary of the cell to reduce the electrolyte flow rate. The aperture at the tip of the Luggin capillary extending into the working electrode chamber of the electrolytic cell is less than 0.2mm.
- The reference electrode chamber of the electrolytic cell adopts internal threaded sealing. It must be sealed during use to effectively prevent leakage between the reference electrode chamber and the working electrode chamber due to the U-shape effect.
- Electrodes must be dimensionally compatible with the cell.
- The electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell of this electrolytic cell has a special design with an overhead layer, effectively eliminating solution dead volume.
- This electrolytic cell operates on a relatively sealed system. The cathode and anode chambers are isolated by an ion membrane, and the two chambers are sealed and linked using a chain for easy membrane replacement.
- The inner core of the electrolytic cell adopts a 360-degree rotation of polytetrafluoroethylene, ensuring precise alignment of the electrodes with the channels (typically parallel to the membrane).
- The electrolytic cell is equipped with an aeration device that allows ventilation below the liquid level, choosing different shapes of aeration devices based on different experiments.

Volume (ml)		Volume (ml)		
5-10mL		150mL	<b>Single layer</b>	<b>Jacketed</b>
30mL		200mL		
50mL		250mL		
100mL				

All sizes listed are common sizes, can be customized according to requirements.

## Replaceable Membrane Electrolytic Cell Series

### 3H Type Replaceable Membrane Electrolytic Cell (Absolutely Sealed) Model: C008-2



- Cell Material: High purity borosilicate glass.
- This electrolytic cell operates on an absolutely sealed system. The cathode and anode chambers are isolated by an ion exchange membrane, and the two chambers are sealed and linked using a chain for easy membrane replacement. It can achieve atmospheric protection by adding valves and an aeration device. It can be subjected to vacuum (less than -100Kpa), and slight pressurization with pressure not exceeding 0.5MPa.
- Commonly used in three-electrode systems. The electrodes of this electrolytic cell must be customized to match the cell dimension.
- This electrolytic cell separates the reference electrode and working electrode chambers, connected by a Luggin capillary, effectively reducing the resistivity (R drop). The aperture at the tip of the Luggin capillary extending into the working electrode chamber of the electrolytic cell must not exceed 0.2mm. An agar-agar can be added inside the Luggin capillary of the electrolytic cell to reduce the electrolyte flow rate.
- The reference electrode chamber of the electrolytic cell adopts internal threaded sealing. It must be sealed during use to effectively prevent leakage between the reference electrode chamber and the working electrode chamber due to the connector effect.
- The electrodes of the electrolytic cell need to be purchased separately.
- The inner core of the electrolytic cell adopts a 360-degree rotation of polytetrafluoroethylene, ensuring precise alignment of the electrodes with the channels (typically parallel to the membrane).

Volume (ml)		Volume (ml)	Single layer	Jacketed
5-10mL		150mL		
30mL		200mL		
50mL		250mL		
100mL				

All sizes listed are common sizes, can be customized according to requirements.

## Replaceable Membrane Electrolytic Cell Series

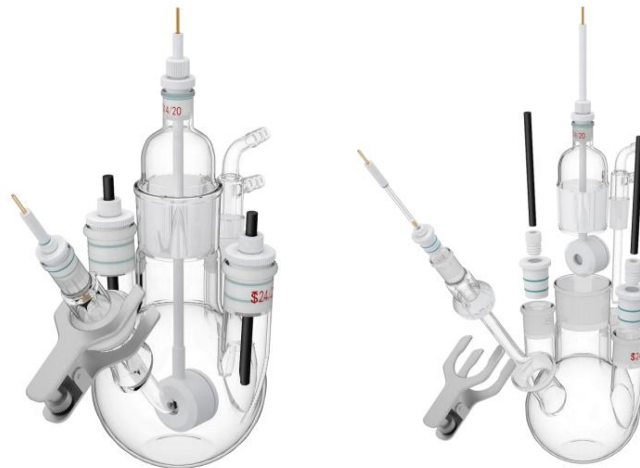
Small Volume 3H Type Replaceable Membrane Electrolytic Cell Model: C008-10



- Cell Material: High purity borosilicate glass.
- This electrolytic cell is available in both relatively sealed and absolutely sealed systems. The relative sealing of the electrode section in this electrolytic cell is achieved on the PTFE stopper, using screws to compress O-rings for effective sealing. The cathode chamber and anode chamber are isolated by an ion exchange membrane, and the two chambers are sealed and linked using a chain for easy membrane replacement.
- Commonly used in three-electrode systems, the single-cell volume of the electrolytic cell is 10ml.
- Electrodes of this electrolytic cell are required to be dimensionally compatible. The reference electrode and working electrode are in the same chamber, effectively reducing the resistivity (R drop).
- The electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell features a special suspension layer design, effectively eliminating dead volume.
- The electrolytic cell is equipped with an aeration device that allows ventilation below the liquid level, adjusting atmospheric conditions based on different experiments.

## Corrosion Test Electrolytic Cell series

### Spherical Corrosion Test Cell Model: C009



- Cell Material: High purity borosilicate glass.
- Configuration: Electrolytic cell body, F-type inlet, salt bridge, liquid seal, PTFE stopper, sample support electrode, reference electrode, graphite rod electrode.
- This electrolytic cell operates on a relatively sealed system, commonly used in three-electrode systems. The standard volumes are 500ml and 1000ml, but customization is available based on requirements. It is equipped with an F-type inlet that allows ventilation above and below the liquid level. Atmospheric protection can be adjusted based on different experiments. Venting below the liquid level should be stopped when the experiment begins, leaving only ventilation above the liquid level.
- The electrolytic cell features an adjustable angle salt bridge (Luggin capillary), allowing the reference electrode to align more effectively with corroded samples, thereby reducing the resistivity (R drop).
- When conducting corrosion experiments, chloride ions need to be avoided. Thus the solution filled in the salt bridge is a saturated potassium nitrate solution.
- The working electrode of the electrolytic cell is equipped with a sample support electrode, allowing for sample replacement according to specific requirements. The sample has a diameter of 15mm and a fixed area of 1cm<sup>2</sup>.
- The electrodes of the electrolytic cell need to be purchased separately.
- Application: Suitable for testing and determining metal samples in corrosive environments, ensuring rapid and consistent testing of a set of metal samples in liquid environments. It is compatible with most electrochemical instruments for corrosion testing and can be used at room temperature and high temperatures in corrosive environments (except HF).

Volume (ml)		Volume (ml)	Single layer	Jacketed
500mL		1000mL		

All sizes listed are common sizes, can be customized according to requirements.

## Corrosion Test Electrolytic Cell series

### Plate Corrosion Test Cell Model: C010

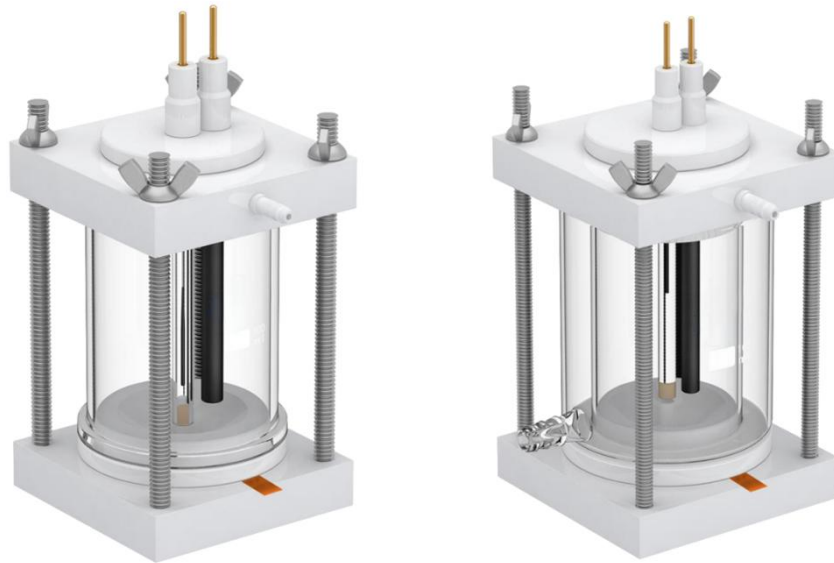


- Cell Material: High purity borosilicate glass.
- The working electrode of the electrolytic cell is a sheet-shaped working electrode, and the sample installation is simple and convenient, easy to disassemble, and easy to handle.
- The side of the electrolytic cell has a circular hole with a fixed area of 1cm<sup>2</sup> (the required size can be customized according to requirements), and an O-ring that can be sealed.
- The conductive link of the working electrode of the electrolytic cell is made of gold-plated copper sheet, and the principle of extruding the sample sheet is used for conducting the sample sheet. The gold-plated copper sheet has good corrosion resistance and aesthetics.
- The electrolytic cell sample holder is made of corrosion resistant 316 stainless steel.
- To achieve a better experimental diffusion effect, the electrolytic cell has added a stirring bar under the cylindrical cell body, just place the stirring bar in the cell, and place the cell body on the magnetic stirrer for magnetic stirring.
- The auxiliary electrode (counter electrode) of the electrolytic cell is equipped with 20\*20mm platinum mesh electrodes. The electrodes of the electrolytic cell need to be purchased separately.
- The electrolytic cell is equipped with a special salt bridge for the reference electrode. If the corrosion test needs to avoid chloride ions, can add saturated potassium nitrate solution to the salt bridge instead.

Volume (ml)	Single layer	Jacketed	Volume (ml)	Single layer
250mL			PTFE-500ml	
500mL				
1000mL				
Option to add thermometer				

## Corrosion Test Electrolytic Cell series

### Coating Corrosion Test Cell Model: C011



- Cell Material: High purity borosilicate glass.
- The bottom of the electrolytic cell features a circular hole with a fixed area of 1 square centimeter (customizable to desired dimensions) and a sealable O-ring.
- After placing the sample in the circular hole, the working sample is pressed and sealed by adjusting the four screws on the top of the cell body.
- The conductive connection of the working electrode in this electrolytic cell uses the principle of bonding a copper tape to the working sample for sample conductivity.
- The working electrode employed in this electrolytic cell is a sheet-type working electrode, facilitating easy sample installation, removal, and handling.
- Copper tape is convenient to use, easily replaceable after corrosion, ensuring better conductivity.
- The electrolytic cell is available in single-layer and jacketed-layer forms. The jacketed-layer electrolytic cell incorporates a jacket layer allows temperature-controlled water circulation, which ensures a constant temperature inside the electrolytic cell.
- This electrolytic cell can be used for electrochemical experiments on samples before electron microscope scanning or for coating corrosion performance testing during corrosion tests.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

Volume (ml)		Volume (ml)	Single layer	Jacketed
30mL		150mL		
50mL		200mL		
100mL		250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Quartz Electrochemical Cell Series

### Square Quartz Electrochemical Cell (Non-Sealed) Model: C012-1



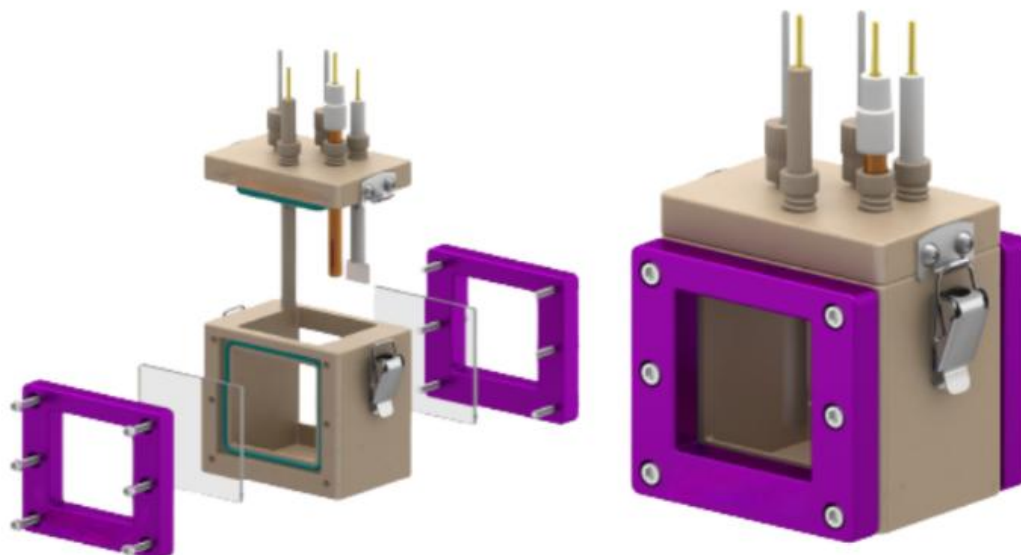
- Cell Material: highly transparent quartz.
- The transmittance of the cell > 95%.
- The electrolytic cell is polished from one piece, not glued nor formed.
- The cover of the cell is made of PTFE (the cover can be punched according to requirements, and round holes or square holes can be punched).
- The electrolytic cell can withstand a maximum temperature of 900°C. If the cell body is heated and sterilized, please separate the cover from the cell body.
- The electrolytic cell can add sand core salt bridge or Luggin capillary salt bridge.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

No.	L*W*H (mm)	No.	L*W*H (mm)
1	30*30*40	4	60*60*60
2	40*50*60	5	50*50*60 with integrated mixer
3	50*50*50		

All sizes listed are common sizes, can be customized according to requirements.

## Quartz Electrochemical Cell Series

### Square Quartz Electrochemical Cell (Sealed) Model: C012-2



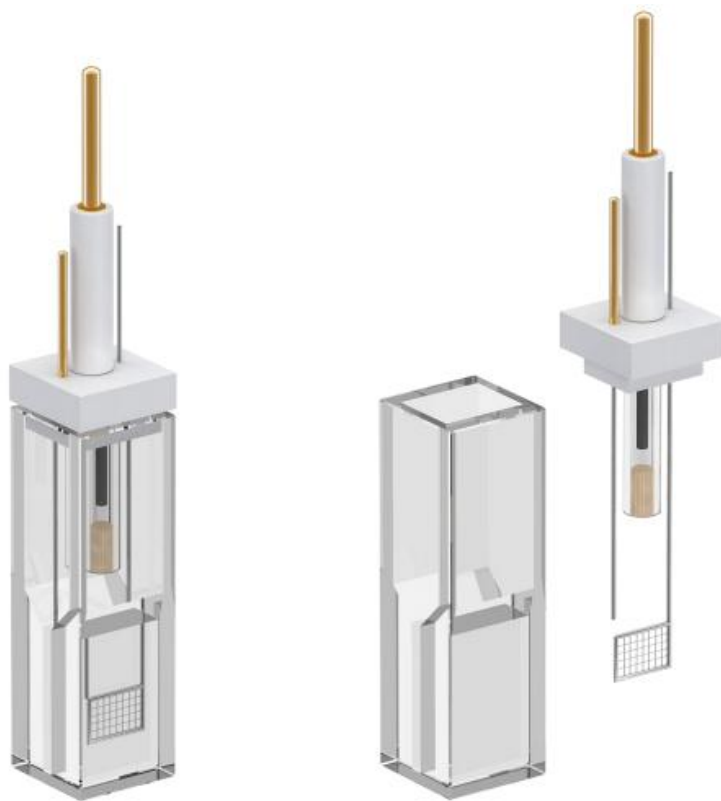
- This electrochemical cell is a sealed photoelectrochemical cell.
- The cell window is made of high-transparency quartz glass with a light transmittance of no less than 95%.
- The window protection plate (purple) is made of aluminum alloy for better heat dissipation.
- The main body of the cell is made of PEEK, which provides high hardness and corrosion resistance.
- The cell cover adopts a quick-release design, making sealing and operation more convenient.

No.	L*W*H (mm)	No.	L*W*H (mm)
1	30*30*40	4	60*60*60
2	40*50*60	5	50*50*60 with integrated mixer
3	50*50*50		

All sizes listed are common sizes, can be customized according to requirements.

## Quartz Electrochemical Cell Series

### Thin-Layer Spectroelectrochemical Cell (Open) Model: C013-1

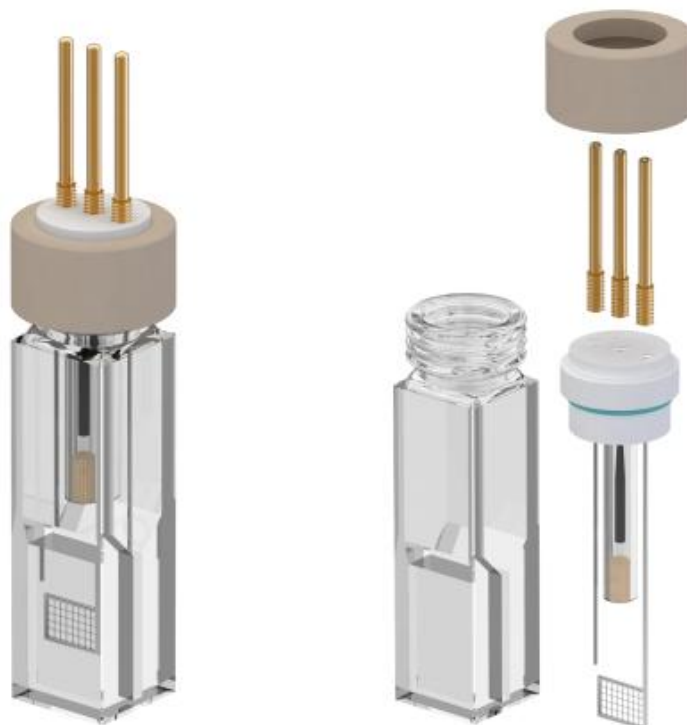


- The cell is made from one piece quartz material, finely polished, transparent on all 4 sides.
- The quartz material has an optical transmittance >95%.
- The cover is made of PTFE.
- The matching electrode of the electrolytic cell is the Ag/AgCl reference electrode (diameter of 3.8mm), the platinum wire counter electrode (diameter of 0.5mm), and the platinum mesh working electrode (6\*7mm).
- The working electrode of the electrolytic cell can also be replaced with a glassy carbon or gold disk with a diameter of 3mm according to requirements.
- The gap size of the electrolytic cell is 8\*6.5\*1.5mm.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

<b>Volume (ml)</b>	<b>Open-type</b>
Gap size 8*6.5*1mm	

## Quartz Electrochemical Cell Series

Thin-Layer Spectroelectrochemical Cell (Sealed) Model: C013-2

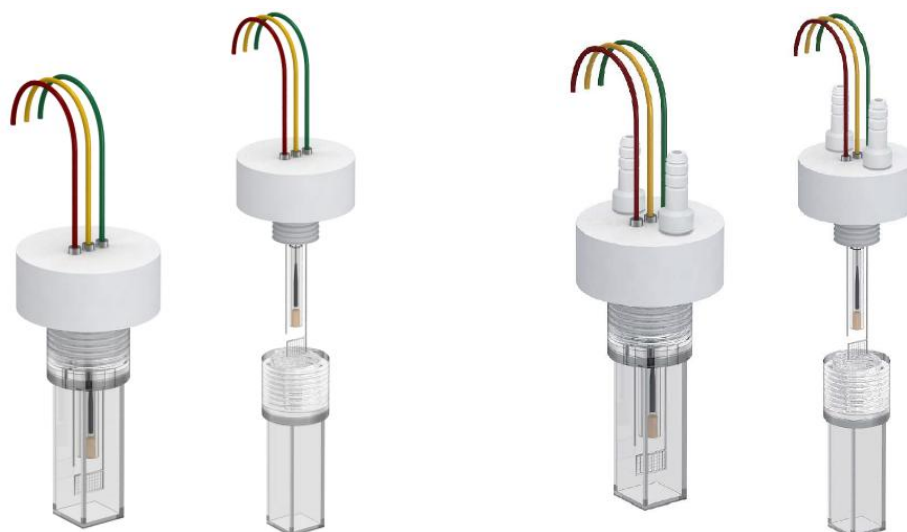


- The cell is made from one piece quartz material, finely polished, transparent on all 4 sides.
- The quartz material has an optical transmittance >95%.
- The lid of the cell is PEEK.
- The electrolytic cell is a square cell body with a size of 12\*12mm.
- The electrolytic cell is equipped with electrodes, Ag/AgCl reference electrode (diameter of 3.0mm), platinum wire counter electrode (diameter of 0.5mm), platinum mesh working electrode (6\*7mm).
- The gap size of the electrolytic cell is the gap 8\*6.5\*1.5mm.
- The quartz sealing part of the electrolytic cell is designed with an external threaded port, and the inner core is made of 360° rotating PEEK material, so that the electrodes can accurately correspond to the gaps, and the outer cover of the PEEK material is screwed tightly for sealing.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

<b>Volume (ml)</b>	<b>Sealed-type</b>
Gap size 8*6.5*1mm	

## Quartz Electrochemical Cell Series

### Small Quartz Spectroelectrochemical Cell (Sealed Cuvette Type) Model: C013-3



- The cell is made of all-quartz integrally polished, with light transmission on all sides, and the optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is equipped with gas inlet and outlet devices, and the electrolytic cell is equipped with electrodes, Ag/AgCl reference electrode (diameter of 3.0mm), platinum wire counter electrode (diameter of 0.5mm), glassy carbon working electrode (diameter of 3mm).
- The working electrode of the electrolytic cell can also be replaced with a gold disc, platinum disc or other electrodes with a diameter of 3mm according to requirements.
- The electrolytic cell is a square cell body with a size of 12\*12mm. The electrolytic cell is an absolutely sealed system. The quartz sealing part of the electrolytic cell is designed with an internal thread port and sealed by tightening the cover made of PTFE.
- The electrodes of the electrolytic cell are plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

<b>Size (mm)</b>	<b>Sealed-type</b>
12*12mm	

## Quartz Electrochemical Cell Series

### Cylindrical Quartz Electrochemical Cell (Open) Model: C014



- The body of the electrolytic cell is fabricated by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell can be equipped with gas inlet and outlet devices.
- The electrodes of this electrolytic cell need to be purchased separately.
- The electrolytic cell is equipped with gas inlet and outlet devices, and the electrolytic cell is equipped with electrodes, Ag/AgCl reference electrode (diameter of 3.8mm), platinum wire counter electrode (diameter of 0.5mm), glassy carbon working electrode (diameter of 3mm).
- The working electrode of the electrolytic cell can also be replaced with a 3mm diameter gold disc, platinum disc or other electrodes according to requirements.
- The electrolytic cell is an open system.
- The electrolytic cell contains a PTFE base to prevent the bottom quartz light window from being scratched.

No.	OD/mm	ID/mm	H/mm	No.	OD/mm	ID/mm	H/mm
1	15	12	20	3	25	15	32
2	25	20	30	4	50	46	50

## Quartz Electrochemical Cell Series

### Cylindrical Quartz Electrochemical Cell (Relatively Sealed) Model: C015-1



- The body of the electrolytic cell is fabricated by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is a relatively sealed system. It is equipped with gas inlet and outlet devices.
- The electrolytic cell is recommended to choose Ag/AgCl reference electrode (diameter of 3.8mm), platinum wire counter electrode (diameter of 0.5mm), and glassy carbon working electrode (diameter of 3mm). The working electrode of the electrolytic cell can also consider a 3mm diameter gold disc, platinum disc or other electrodes according to requirements.
- The quartz sealing part of the electrolytic cell is designed with internal thread and is sealed by screwing the cover made of PTFE. Electrode area seals via O-rings and screws.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

Volume (ml)	OD (mm)	ID (mm)	H (mm)
20mL	42	38	26

## Quartz Electrochemical Cell Series

### Cylindrical Quartz Electrochemical Cell (Absolutely Sealed) Model: C015-2

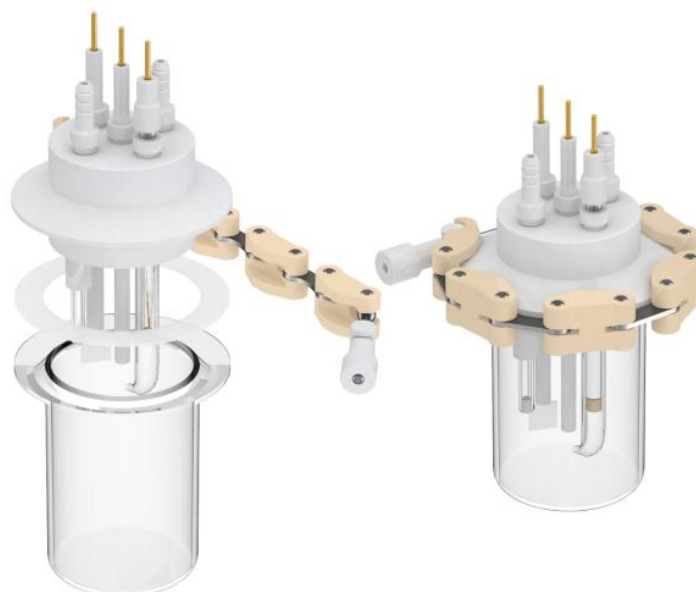


- The body of the electrolytic cell is fabricated by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is absolutely sealed system, which is equipped with gas inlet and outlet devices.
- It is recommended to choose Ag/AgCl reference electrode (diameter of 3.8mm), platinum wire counter electrode (diameter of 0.5mm), and glassy carbon working electrode (diameter of 3mm). The working electrode of the electrolytic cell can also consider a 3mm diameter gold disc, platinum disc or other electrodes according to requirements.
- The quartz sealing part of the electrolytic cell adopts a flange design, and the cover made of PTFE is screw threaded, with sealing O-ring.
- The electrodes of the electrolytic cell are plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.

Volume (ml)	OD (mm)	ID (mm)	H (mm)
20mL	42	38	26

## Quartz Electrochemical Cell Series

### Cylindrical Quartz Electrochemical Cell (Relatively Sealed) Model: C017-1

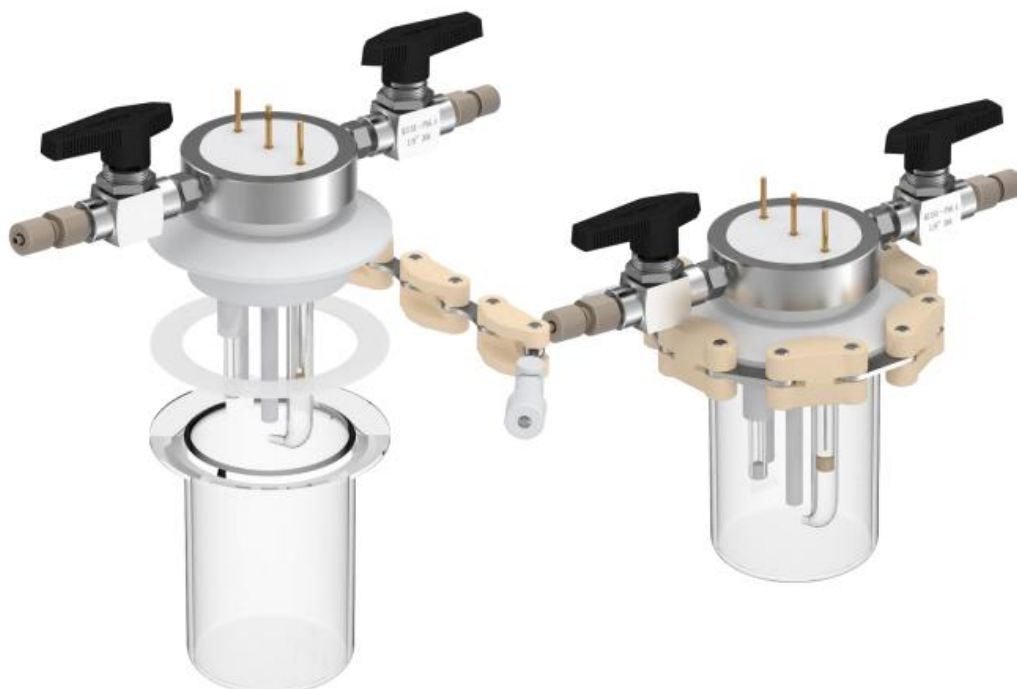


- The body of the electrolytic cell is fabricated by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is relatively sealed, which can be equipped with gas inlet and outlet devices.
- The reference electrode of the electrolytic cell generally chooses a conventional reference electrode with a diameter of 6mm.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.
- The counter electrode of the electrolytic cell is selected to have a diameter of 6mm.
- The working electrode of the electrolytic cell chooses an electrode or electrode clip with a diameter of 6mm.
- The quartz sealing part of the electrolytic cell adopts a flange design, and the PTFE cover is closed by a locking ring, and the seal is achieved by O-ring. Electrode area seals via O-rings and screws.

Volume (ml)	OD (mm)	ID (mm)	H (mm)
50mL	55	50	52 (effective height 35)

## Quartz Electrochemical Cell Series

### Cylindrical Quartz Electrochemical Cell (Absolutely Sealed) Model: C017-2



- The body of the electrolytic cell is fabricated by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is equipped with gas inlet and outlet devices.
- The electrodes of the electrolytic cell are plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- The electrodes of the electrolytic cell need to be purchased separately and must be matched with the cell.
- The reference electrode of the electrolytic cell generally chooses Ag/AgCl electrode (diameter of 3.8mm).
- The reference electrode of the electrolytic cell is a platinum wire electrode or a platinum sheet electrode with a diameter of 0.5mm.
- The working electrode of the electrolytic cell is a glassy carbon electrode, and the working electrode can also be replaced with a gold disc, platinum disc or other electrode holders with a diameter of 3mm.

Volume (ml)	OD (mm)	ID (mm)	H (mm)
50mL	55	50	52 (effective height 35)

## Quartz Electrochemical Cell Series

Cylindrical Quartz Electrochemical Cell (Relatively Sealed, Side Window) Model: C018-1



- The body of the electrolytic cell is welded by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The electrolytic cell is a relatively sealed system. The quartz sealing part of the electrolytic cell adopts a flange design, and the PTFE cover is locked by a locking ring, and the seal is sealed by squeezing the sealing ring. The electrolytic cell can be equipped with gas inlet and outlet devices.
- The reference electrode of the electrolytic cell generally chooses a conventional reference electrode with a diameter of 6mm.
- The contrast electrode of this electrolytic cell chooses an electrode with a diameter of 6mm.
- The working electrode of the electrolytic cell chooses an electrode or electrode clip with a diameter of 6mm.
- The electrodes of the electrolytic cell need to be purchased separately
- Electrode area seals via O-rings and screws.
- For absolute sealing system, please refer to C018-2.

Volume (ml)		Volume (ml)
50mL		200mL
100mL		250mL
150mL		500mL

## Quartz Electrochemical Cell Series

Cylindrical Quartz Electrochemical Cell (Absolutely Sealed, Side Window) Model: C018-2

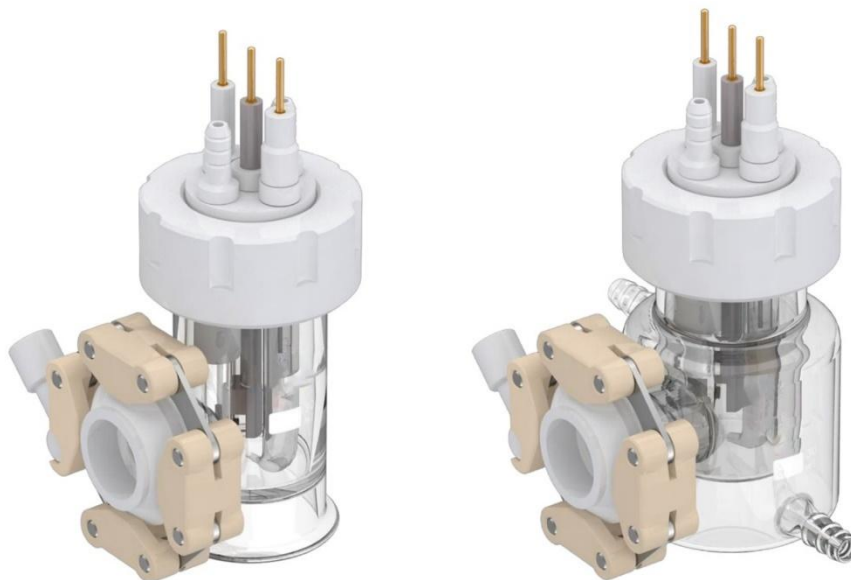


- The body of the electrolytic cell is welded by full quartz fusion method.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The cover is made of PTFE.
- The cell is absolutely sealed, which can be equipped with gas inlet and outlet devices.
- The electrode part of the electrolytic cell is plugged in and out through the earphone jack on the cover, so that.
- The electrodes of the electrolytic cell need to be purchased separately, and must be matched with the cell.
- The reference electrode of the electrolytic cell generally chooses Ag/AgCl electrode (diameter of 3.8mm).
- The counter electrode of the electrolytic cell can choose a platinum wire electrode or a platinum sheet electrode with a diameter of 0.5mm.
- The working electrode can choose a glassy carbon electrode, can also use a gold disc, platinum disc or other electrode holders with a diameter of 3mm.

Volume (ml)		Volume (ml)
50mL		200mL
100mL		250mL
150mL		500mL

## Photocatalytic Electrochemical Cell Series (Single)

**Single-Cell Photocatalytic Electrochemical Cell (Relatively Sealed, Side Window) Model: C019-1**



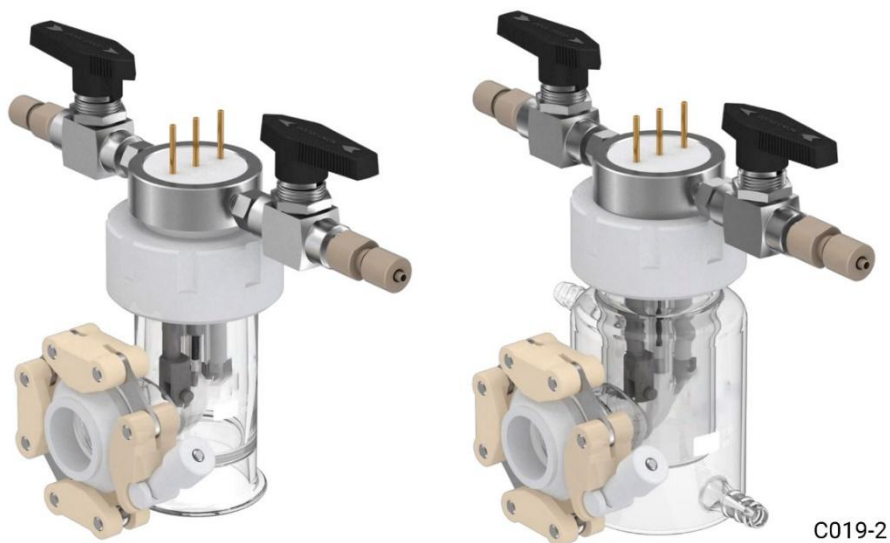
- The cell is made of high purity borosilicate glass.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The quartz window is easily replaceable and securely sealed using a locking ring attached to the cell body.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- Electrodes need to be the longer type based on dimension of the cell.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments
- The electrolyte cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.
- The electrodes of the electrolytic cell need to be purchased separately, and must be matched with the cell.

Volume (ml)	Single layer	Jacketed
50mL		
100mL		
150mL		

All sizes listed are common sizes, can be customized according to requirements.

## Photocatalytic Electrochemical Cell Series

**Single Chamber Photoelectrochemical Cell (Absolutely Sealed, Side Window)**  
**Model: C019-2**



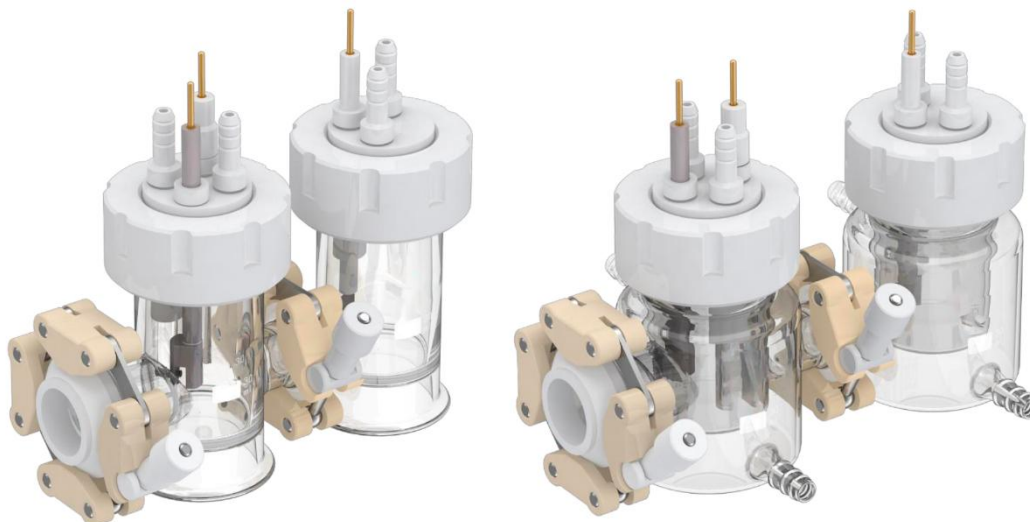
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The quartz window is easily replaceable and securely sealed using a locking ring attached to the cell body.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The sealed cell is equipped with valves and gas connectors; inlet direction is through the aeration device valve. The sealed cell is vacuumable (below -100Kpa), and can be slightly pressurized up to 0.5MPa.
- The working electrode, counter electrode and reference electrode of the cell need to be matched in dimension, inserted through the cover for absolute sealing.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- The cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments
- The cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.

Volume (ml)	Single layer	Jacketed
50mL		
100mL		
150mL		

All sizes listed are common sizes, can be customized according to requirements.

## Single Window Photocatalytic Electrochemical Cell Series (2H)

H-Type Photoelectrochemical Cell (Single Optical Window, Relatively Sealed)  
Model: C023-1



- The cell is made of high purity borosilicate glass.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The quartz window is easily replaceable and securely sealed using a proprietary designed clamp.
- Electrodes need to be the longer type based on dimension of the cell.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cell is a relatively sealed system. The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling. The reference electrode and the working electrode are in the same chamber, which effectively reduces the reduction in R value.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- Electrode area seals via O-rings and screws.
- The electrolyte cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.

Volume (ml)		Single layer	Jacketed
30mL	150mL		
50mL	200mL		
100mL	250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Single Window Photocatalytic Electrochemical Cell Series

H-Type Photoelectrochemical Cell (Single Optical Window, Absolutely Sealed)  
Model: C023-2



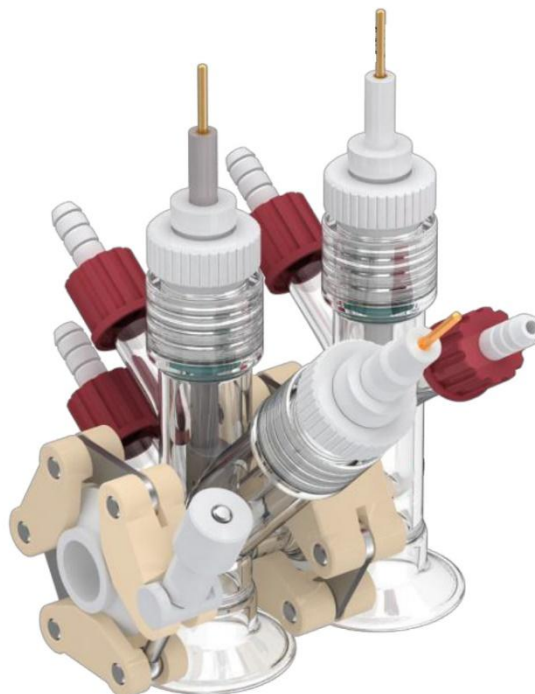
- The optical window of the cell is made of high purity quartz, with a transmittance >95%.
- The sealed cell is vacuumable (below -100Kpa) and can be slightly pressurized up to 0.5MPa for single cell. **Jacketed cells cannot be used for pressurization!** The sealed cell is equipped with valves and gas connectors; inlet direction is through the aeration device valve.
- The working electrode, counter electrode and reference electrode of the cell need to be matched in dimension, inserted through the cover for absolute sealing. The compatible electrodes of the electrolytic cell need to be purchased separately.
- The quartz window is easily replaceable and securely sealed using a locking ring.
- The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling. The reference electrode and the working electrode are in the same chamber, which effectively reduces the reduction in R value.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- The cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments. For example, straight bubbler is used for carbon reduction, and L-type bubbler is used for nitrogen reduction.
- The cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.

Volume (ml)		Single layer	Jacketed
30mL	150mL		
50mL	200mL		
100mL	250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Single Window Photocatalytic Electrochemical Cell Series

Small Volume Photoelectrochemical Cell (Single Optical Window, Relatively Sealed)  
Model: C023-10

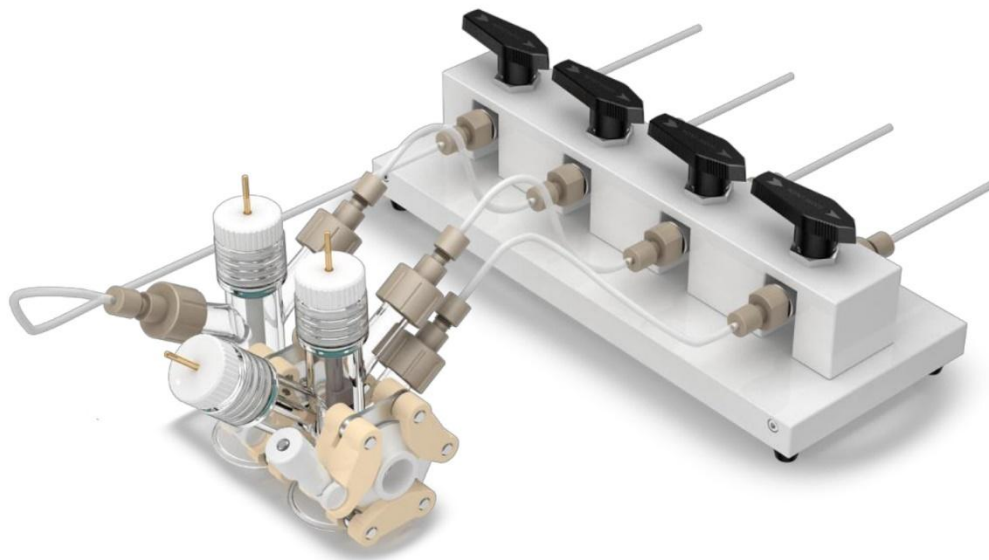


- The cell is made of high purity borosilicate glass.
- The optical window of the cell is made of quartz, with a transmittance >95%.
- The quartz window is easily replaceable and securely sealed using a proprietary designed clamp.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell comes in a 3-electrode system, the single cell volume can be as low as 10ml
- The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling. The reference electrode and the working electrode are in the same chamber, which effectively reduces the reduction in R value.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- Electrode area seals via O-rings and screws.

**Jacket type is not available for small volume cells.**

## Single Window Photocatalytic Electrochemical Cell Series

Small Volume Replaceable Membrane Photoelectrochemical Cell (Single Optical Window, Absolutely Sealed) Model: C023-10-2



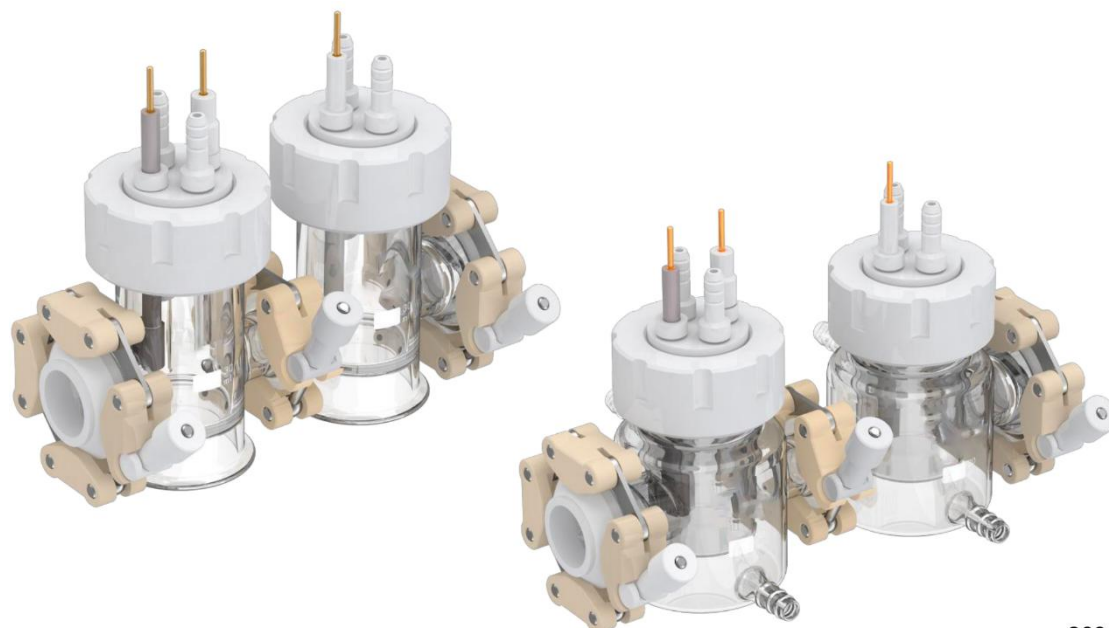
- The optical window of the cell is made of quartz, with a transmittance >95%.
- The quartz windows are easily replaceable and securely sealed using a proprietary designed clamp attached to the cell body, can be assembled and disassembled quickly and conveniently.
- The working electrode, counter electrode and reference electrode of the electrolytic cell must be matched as required. • The compatible electrodes of the electrolytic cell need to be purchased separately.
- The cell body of the electrolytic cell has an overhead layer design, which effectively breaks the solution hiding
- This electrolytic cell is often used in a 3-electrode system, and the single cell volume is 10ml.
- The cathodic chamber and the anode chamber of the electrolytic cell are separated by an ion exchange membrane (prepared by the user), and the two chambers adopt a chain. The sealed connection is convenient to replace the diaphragm, and the reference electrode and the working electrode are in the same room, which can effectively reduce the resistivity (R drop).
- The electrodes of the electrolytic cell are plugged in and out through the earphone jack on the PTFE cover, so that the electrode system is absolutely sealed

**Jacket type is not available for small volume cells.**

**The default of air inlet and outlet are red screw cap with pagoda connector (For silicone tubing with ID6mm). PEEK quick connectors (for PTFE tubing with OD3mm, shown in the product image above) can be purchased separately.**

## Double Window Photocatalytic Electrochemical Cell Series (2H)

H-Type Photoelectrochemical Cell (Double Optical Window, Relatively Sealed)  
Model: C024-1



C024-1

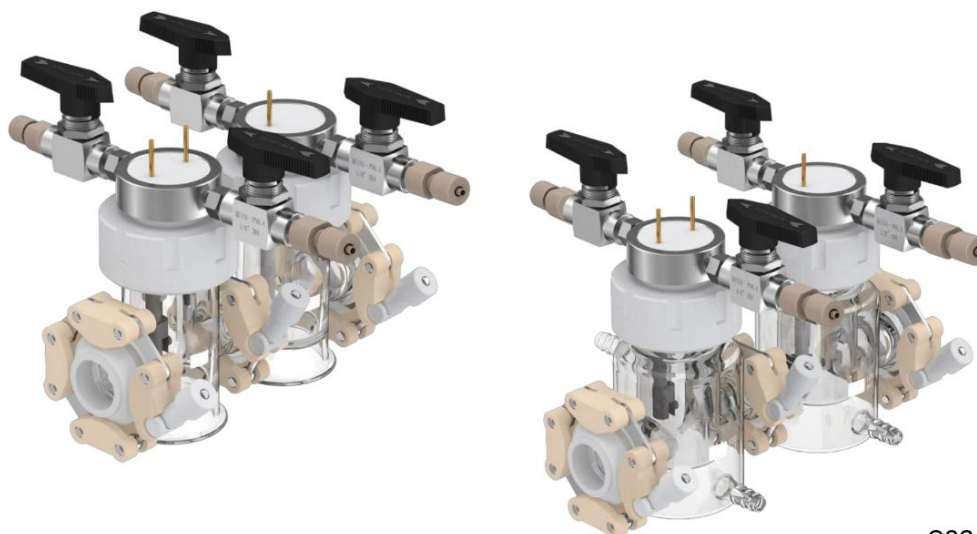
- The cell is made of high purity borosilicate glass.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The dual quartz windows are easily replaceable and securely sealed using a proprietary designed clamp attached to the cell body, can be assembled and disassembled quickly and conveniently.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments
- The electrolyte cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.

Volume (ml)		Volume (ml)		
30mL		150mL	Single layer	Jacketed
50mL		200mL		
100mL		250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Double Window Photocatalytic Electrochemical Cell Series

H-Type Photoelectrochemical Cell (Double Optical Window, Absolutely Sealed)  
Model: C024-2



C024-2

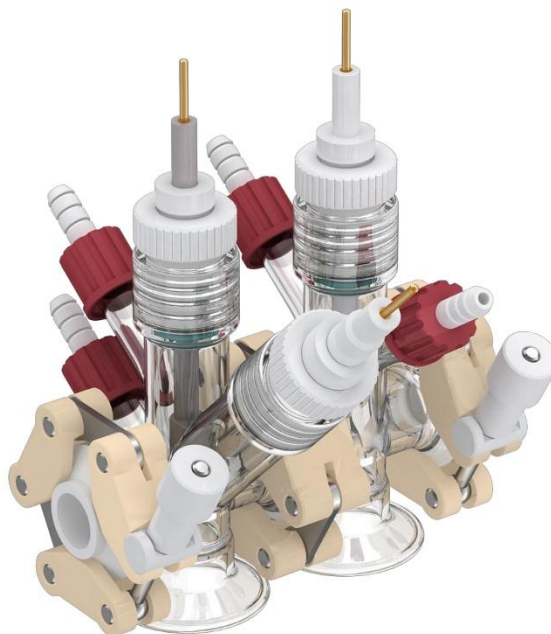
- The optical window of the cell is made of high purity quartz, with a transmittance >95%.
- The dual quartz windows are easily replaceable and securely sealed using a proprietary designed clamp attached to the cell body, can be assembled and disassembled quickly and conveniently.
- The sealed cell is equipped with valves and gas connectors, which is vacuumable (below -100Kpa) and can be slightly pressurized up to 0.5MPa for single cell. **Jacketed cells cannot be used for pressurization!**
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling. The reference electrode and the working electrode are in the same chamber, which effectively reduces the reduction in R value.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- The cell comes in both single-layer and jacket form. The jacket layer allows a constant temperature through water circulation on top of the single layer design.

Volume (ml)		Volume (ml)	Single layer	Jacketed
30mL		150mL		
50mL		200mL		
100mL		250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Double Window Photocatalytic Electrochemical Cell Series

Small-Volume Replaceable Membrane Photoelectrochemical Cell (Single Optical Window, Relatively Sealed) Model: C024-10



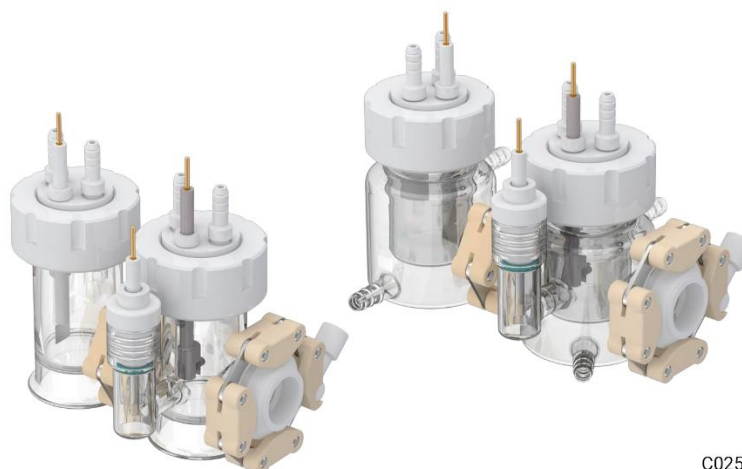
- The cell is made of high purity borosilicate glass.
- The optical window of the cell is made of quartz, with a transmittance >95%.
- The quartz window is easily replaceable and securely sealed using a proprietary designed clamp.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell comes in a 3-electrode system, the single cell volume is 10ml.
- The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling. The reference electrode and the working electrode are in the same chamber, which effectively reduces the reduction in R value.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes to the optical window, then sealed by tightening the outer cover made of POM material.
- Electrode area seals via O-rings and screw caps.

Options without sampling port and with sampling port are both available.

**Jacket type is not available for small volume cells.**

## Single Window Photocatalytic Electrochemical Cell Series (3H)

**3H Type Photoelectrochemical Cell (Single Optical Window, Relatively Sealed)**  
**Model: C025-1**



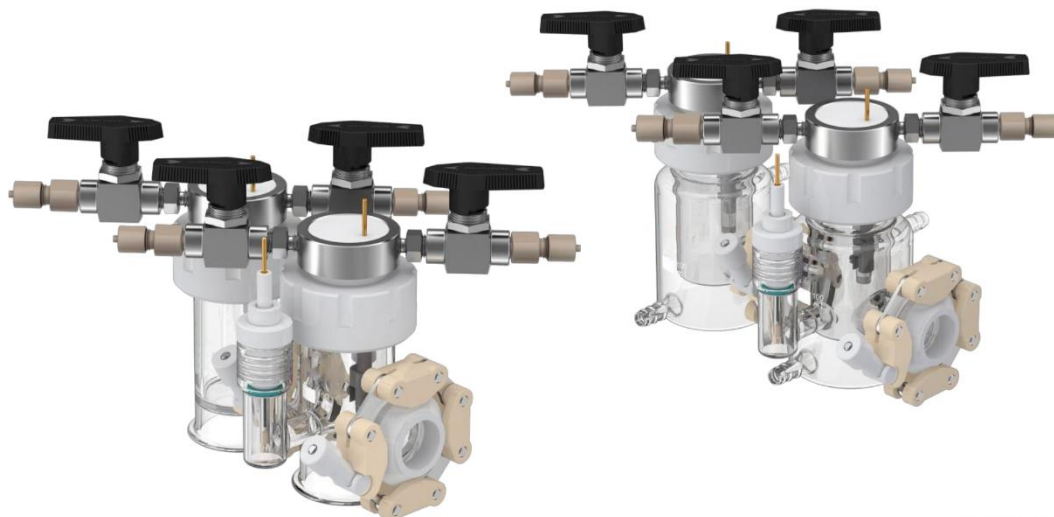
C025-1

- The cell is made of high purity borosilicate glass. The optical window of the cell is made of quartz, with a transmittance >95%.
- Easily replaceable, securely sealed quartz window with proprietary clamp for quick assembly and disassembly. The cell separates the reference electrode from the working electrode chamber, connected by Luggin capillary for reduction in R value. The aperture of the capillary is less than 0.2mm. Agar can be added inside the capillary to reduce the electrolyte flow rate.
- The reference electrode chamber of the cell is sealed with internal threads. Effective sealing is essential during experiments to prevent leakage due to capillary effects between the reference electrode chamber and the working electrode chamber. The anode and cathode chambers of the cell are isolated by an ion exchange membrane and sealed with a chain clamp, facilitating membrane replacement.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The volume of the electrolytic cell ranges from 30ml to 500ml and can also be customized according to requirements.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane), then sealed by tightening the outer cover made of POM material.
- The cell is equipped with a bubbler that can ventilate under the liquid surface, and different shapes of bubblers are selected for the atmosphere according to different experiments. For example, straight bubbler is used for carbon reduction, and L-type bubbler is used for nitrogen reduction.

Volume (ml)		Volume (ml)		
30mL		150mL	Single layer	Jacketed
50mL		200mL		
100mL		250mL		

## Single Window Photocatalytic Electrochemical Cell Series

3H Type Photoelectrochemical Cell (Single Optical Window, Absolutely Sealed)  
Model: C025-2



C025-2

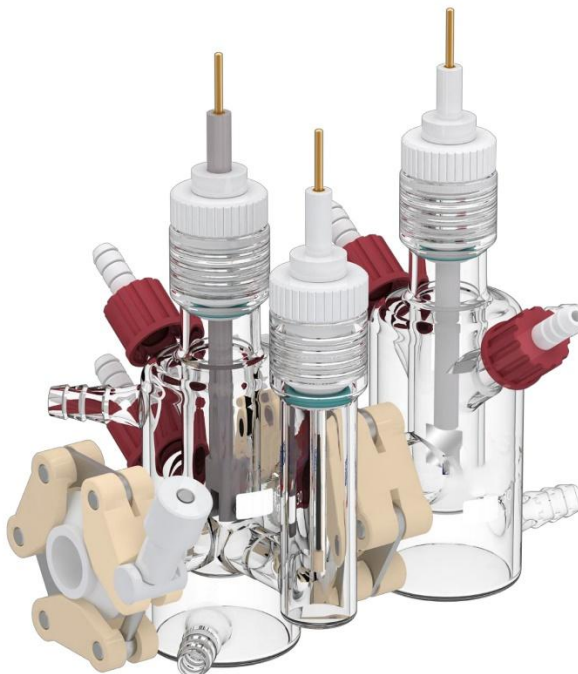
- The optical window of the cell is made of quartz, with a transmittance >95%. It's easily replaceable and securely sealed with a unique clamp design, allowing quick assembly and disassembly.
- Commonly used in a 3-electrode setup, customizable volume: 30ml to 500ml (min. 30ml). Available in single-layer or jacketed form for precise temperature control through water circulation.
- The sealed cell is equipped with valves and gas connectors, which is vacuumable (below -100Kpa) and can be slightly pressurized up to 0.5MPa for single cell. **Jacketed cells cannot be used for pressurization!**
- The working electrode, counter electrode and reference electrode of the cell need to be matched in dimension, inserted through the cover for absolute sealing.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- Cell isolates reference electrode via a Luggin capillary (aperture < 0.2mm) to reduce R value. Agar can be added for lower electrolyte flow.

Volume (ml)		Volume (ml)		
30mL		150mL	Single layer	Jacketed
50mL		200mL		
100mL		250mL		

All sizes listed are common sizes, can be customized according to requirements.

## Single Window Photocatalytic Electrochemical Cell Series

Small Volume 3H Type Photoelectrochemical Cell (Single Optical Window, Relatively Sealed) Model: C025-10



- The cell is made of high purity borosilicate glass.
- The cell's quartz optical window has >95% light transmittance. It's easily replaceable and securely sealed with a unique clamp design, allowing quick assembly and disassembly.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The single-layer cell body has a top-drop vial design, which effectively reduces the dead volume
- This cell comes in a 3-electrode system, the single cell volume is 10ml.
- The cathode chamber and the anode chamber are separated by an ion exchange membrane. The two chambers are connected by a flange with chain-type clamp, which is convenient for assembling and disassembling.
- Electrode area seals via O-rings and screw caps.
- Cell isolates reference electrode via a Luggin capillary (aperture < 0.2mm) to reduce R value. Agar can be added for lower electrolyte flow.
- The cell is equipped with a bubbler that can ventilate under the liquid surface, and different shapes of bubblers are selected for the atmosphere according to different experiments. For example, straight bubbler is used for carbon reduction, and L-type bubbler is used for nitrogen reduction.

**Jacket type is not available for small volume cells.**

## Photoelectrochemical Cell Series

### Single-Cell Full PTFE Photoelectrochemical Cell (Relatively Sealed) Model: C026-1



- The electrolytic cell is a photoelectrochemical cell.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cell body of the electrolytic cell is designed with an external threaded port. The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane). lid to seal
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.
- This electrolytic cell can add a sampling port on the cell body, at this time additional cost is required
- The cell's quartz plate is removable for quick replacement

Volume (ml)	Volume (ml)
50mL	200mL
100mL	250mL
150mL	500mL

All sizes listed are common sizes, can be customized according to requirements.

## Photoelectrochemical Cell Series

### Single-Cell Full PTFE Photoelectrochemical Cell (Absolutely Sealed) Model: C026-2



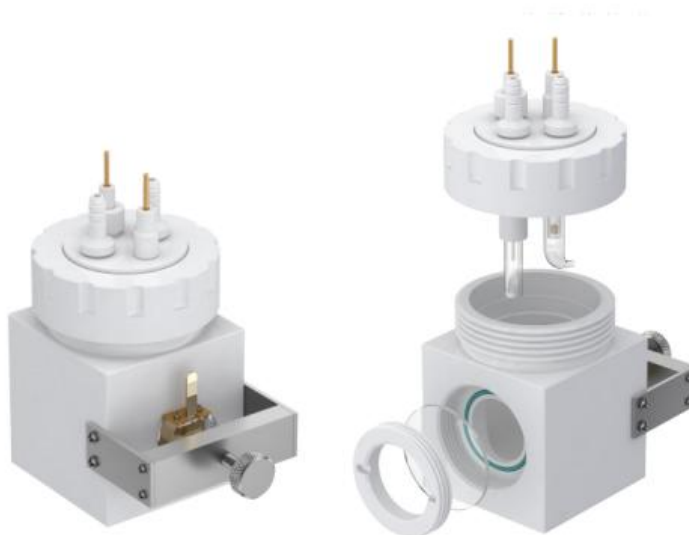
- The electrolytic cell is a photoelectrochemical cell.
- The optical window of the cell is made of quartz, with a transmittance >95%.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- The electrode part of the electrolytic cell is plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- The body of the cell is made of PTFE.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cell body of the electrolytic cell is designed with an external threaded port. The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane). lid to seal
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.
- This electrolytic cell can add a sampling port on the cell body, at this time additional cost is required.
- The cell's quartz plate is removable for quick replacement.

Volume (ml)		Volume (ml)
50mL		200mL
100mL		250mL
150mL		500mL

All sizes listed are common sizes, can be customized according to requirements.

## Photoelectrochemical Cell Series

**Single-Cell Full PTFE Photoelectrochemical Cell (Relatively Sealed, Bracket Type)  
Model: C026-3**



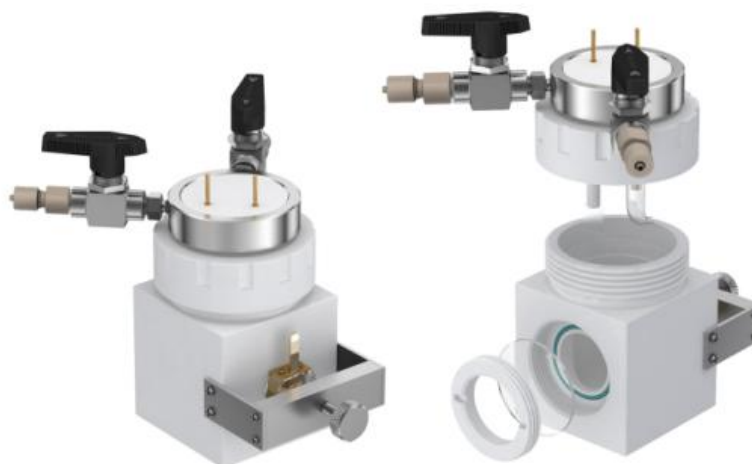
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The working electrode of the electrolytic cell can use non-standard samples, but it needs to cover the positioning hole.
- The electrolytic cell has a fixed area of 1cm<sup>2</sup>, and can also be customized.
- The electrolytic cell is screwed into the back screw to withstand the working sample, and the working electrode is used to press the positioning hole to achieve the sealing of the cell body.
- The standard area of the electrolytic cell is 1cm<sup>2</sup>, and it can also be customized according to requirements.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane), and seal by screwing on the PTFE outer cover.
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.

Volume (ml)		Volume (ml)
50mL		200mL
100mL		250mL
150mL		500mL

All sizes listed are common sizes, can be customized according to requirements.

## Photoelectrochemical Cell Series

**Single-Cell Full PTFE Photoelectrochemical Cell (Absolutely Sealed, Bracket Type)  
Model: C026-4**



- The electrolytic cell is a photoelectrochemical cell.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%. The cell's quartz plate is removable for quick replacement.
- The working electrode of the electrolytic cell can use non-standard samples, but it needs to cover the positioning hole.
- The cell is screwed into the back screw to withstand the working sample, and the working electrode is used to press the positioning hole to achieve the sealing of the cell body.
- The standard area of the cell is 1cm<sup>2</sup>, and it can also be customized according to requirements. The counter electrode and reference electrode of the electrolytic cell must be customized to match the cell. The electrode part of the cell is plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- The compatible electrodes of the electrolytic cell need to be purchased separately.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane).
- The cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.

Volume (ml)		Volume (ml)
50mL		200mL
100mL		250mL
150mL		500mL

All sizes listed are common sizes, can be customized according to requirements.

## Photoelectrochemical Cell Series

**Full PTFE H-Type Replaceable Membrane Photoelectrochemical Cell (Relatively Sealed)**  
**Model: C027-1**



- Electrodes need to be the longer type based on dimension of the cell.
- The body of the cell is made of PTFE.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cathode chamber and anode chamber of the electrolytic cell are separated by an ion membrane (prepared by the user), and the two chambers are sealed and connected by nails, which is convenient for replacing the diaphragm. The reference electrode and the working electrode are in the same chamber, effectively reducing the resistivity (R drop).
- The top electrodes holder is 360-degree rotatable, made of PTFE, allowing precise alignment of electrodes with the channels (generally parallel to the membrane), and seal by screwing on the PTFE outer cover.
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.
- The compatible electrodes of the electrolytic cell need to be purchased separately.

Volume (ml)	Volume (ml)
30mL	150mL
40mL	200mL
50mL	250mL
100mL	500mL

## Photoelectrochemical Cell Series

**Full PTFE H-Type Replaceable Membrane Photoelectrochemical Cell (Absolutely Sealed)  
Model: C027-2**

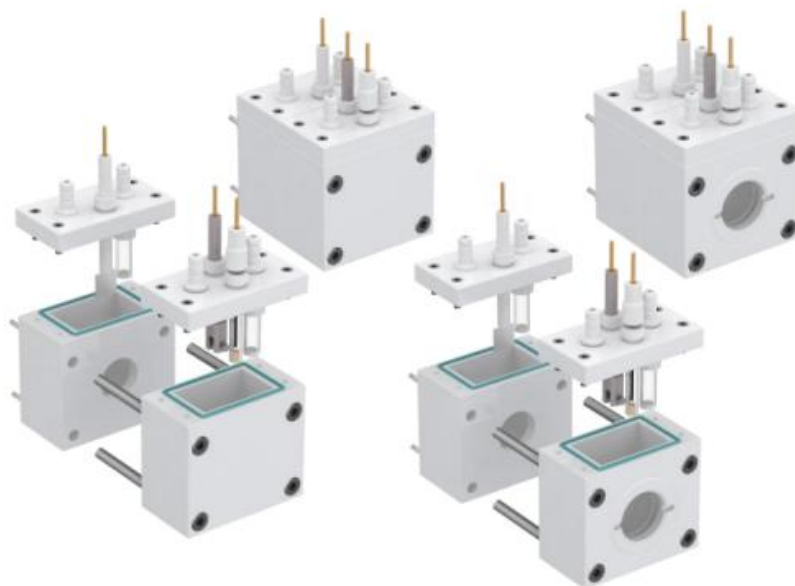


- The sealed cell is equipped with valves and gas connectors, inlet direction is through the aeration device valve.
- The electrolytic cell is an absolutely sealed system, which can be vacuumed through the valve (below -100Kpa), and the electrolytic cell can be slightly pressurized. For safety reasons, the pressure should not be greater than 0.5MPa.
- The working electrode, auxiliary electrode and reference electrode of the electrolytic cell must be customized to match the electrolytic cell. The compatible electrodes of the electrolytic cell need to be purchased separately.
- The electrode part of the electrolytic cell is plugged in and out through the earphone jack on the cover, so that the electrode system is absolutely sealed.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 500ml.
- The cathode chamber and the anode chamber of the electrolytic cell are separated by an ion membrane (prepared by the user), and the two chambers are sealed and connected by nails, which is convenient for replacing the diaphragm.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.
- The quartz plate of the electrolytic cell can be quickly disassembled and replaced.

Volume (ml)	Volume (ml)
30mL	150mL
40mL	200mL
50mL	250mL
100mL	500mL

## Photoelectrochemical Cell Series

### Full PTFE H-Type Replaceable Membrane Photoelectrochemical Cell Model: C032-1

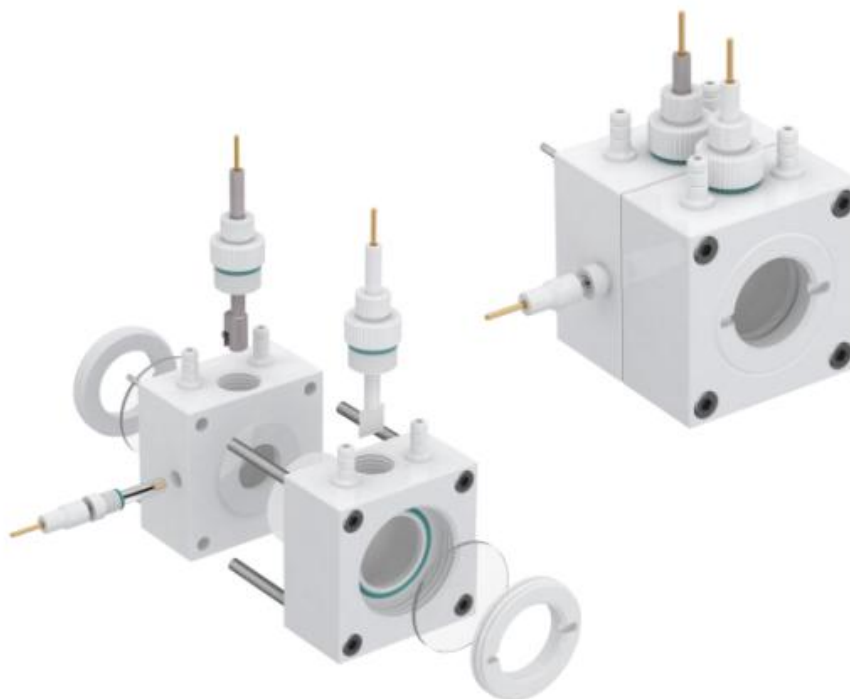


- Electrodes need to be the longer type based on dimension of the cell.
- The body of the cell is made of PTFE.
- This cell is often used in a 3-electrode system, with a customizable volume of 25ml to 40ml.
- The electrolytic cell is a relatively sealed system. The cathode chamber (working electrode) and the anode chamber (comparison electrode) are separated by an ion membrane (prepared by the user). The two chambers are sealed and connected by nails, which is convenient for replacing the diaphragm. The working electrode is in the same room, effectively reducing the resistivity (R drop).
- The sealing part of the cell body of the electrolytic cell is in the form of a pressure plate, so that the cover and the cell body can be sealed.
- Electrode area seals via O-rings and screws.
- The electrolyte cell is equipped with a bubbler that can aerate below the liquid surface, creating different atmospheres for various experiments.
- The electrolytic cell can also increase the optical window.
- The compatible electrodes of the electrolytic cell need to be purchased separately.

Volume (ml)
25mL
40mL
25mL (with optical window)
40mL (with optical window)

## Photoelectrochemical Cell Series

Full PTFE H-Type Replaceable Membrane Photoelectrochemical Cell Model: C032-2

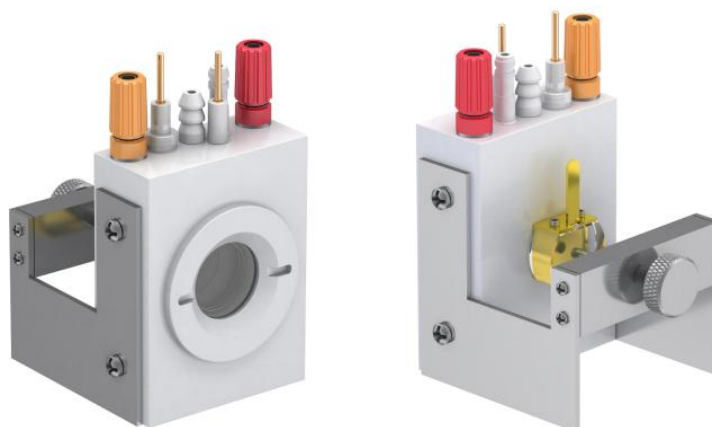


- Electrodes need to be the longer type based on dimension of the cell.
- The body of the cell is made of PTFE.
- This cell is often used in a 3-electrode system, with a customizable volume of 30ml to 40ml.
- The electrolytic cell is a relatively sealed system. The cathode chamber (working electrode) and the anode chamber (comparison electrode) are separated by an ion membrane (prepared by the user). The two chambers are sealed and connected by nails, which is convenient for replacing the diaphragm. The working electrode is in the same room, effectively reducing the resistivity (R drop).
- The cell body of the cell is designed with internal thread. Electrode area seals via O-rings and screws.
- The electrolytic cell is equipped with a device that can ventilate under the liquid surface, and the atmosphere can be adjusted according to different experiments.
- The quartz plate of the electrolytic cell can be quickly disassembled and replaced.
- The diameter of the optical window is 37mm.
- The compatible electrodes of the electrolytic cell need to be purchased separately.

Volume (ml)
25mL
40mL

## Photoelectrochemical Cell Series

### Small Volume Side Window Electrochemical Cell (Bracket Type) Model: K1300

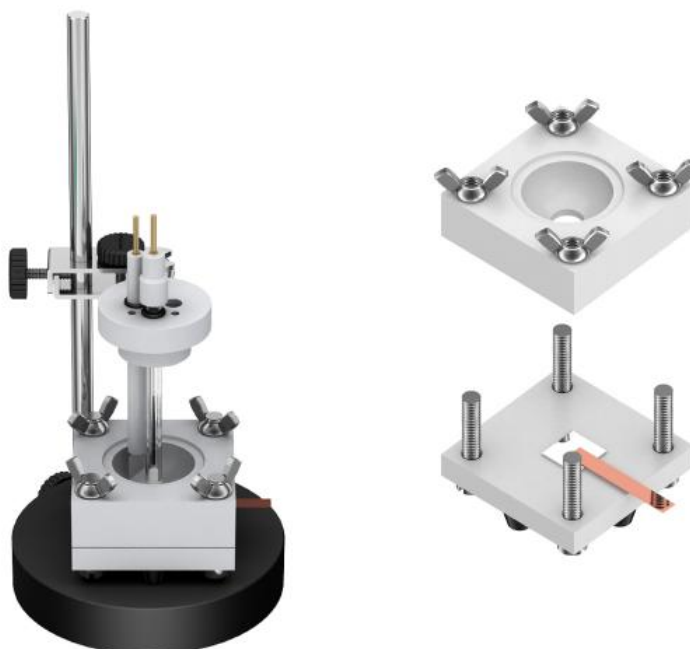


- The electrolytic cell is a photoelectrochemical cell. The cell is made of PTFE.
- The optical window of the electrolyte cell is made of quartz, with a transmittance >95%.
- The working electrode of the electrolytic cell can use non-standard samples, but it needs to cover the positioning hole.
- The electrolytic cell has a fixed area of 1cm<sup>2</sup>, and can also be customized.
- The cell reference electrode is Ag/AgCl electrode.
- The counter electrode of the electrolytic cell is a platinum wire electrode.
- The electrolytic cell supports the working sample by screwing in the back screw, and uses the working electrode to press the positioning hole to achieve the sealing of the cell body.
- The cell has a nominal area of 1cm<sup>2</sup>.
- The left and right colored interfaces of the electrolytic cell are convenient for connection with the reference electrode and counter electrode of the electrochemical workstation.
- The compatible electrodes of the electrolytic cell need to be purchased separately.

Volume (ml)
5mL
10mL

## Photoelectrochemical Cell Series

### Full PTFE Plate/Sheet Electrolytic Cell Model: C030



- The cell is made of PTFE. The cell is divided into upper and lower layers, the upper layer is the cell body, and the lower layer is the fixed backing plate.
- The cell compresses the working electrode sample by tightening the screws around it.
- The cell uses a sheet-shaped working electrode, and the sample is easy to install, easy to disassemble, and easy to handle.
- The cell can be used for electrochemical experiments before electron microscope scanning, or for coating corrosion performance testing during corrosion testing.
- The bottom of the electrolytic cell has a circular hole with a fixed area of 1cm<sup>2</sup> (the required size can be customized according to requirements), and an O-ring that can be sealed. After placing the sample in the round hole, adjust and tighten the screw on the top of the cell body so that it can compress the sample to achieve a sealing effect.
- The conductive link of the working electrode of the electrolytic cell is made of copper tape, which is glued to the sample to make the sample conductive. Copper tape is easy to use, easy to replace after corrosion, and can better ensure electrical conductivity (sold separately).
- Reference Electrode: Ag/AgCl, Saturated Calomel (sold separately).
- Counter Electrode: platinum column, platinum sheet (sold separately).
- Working Electrode: sample to be tested (need to be prepared).

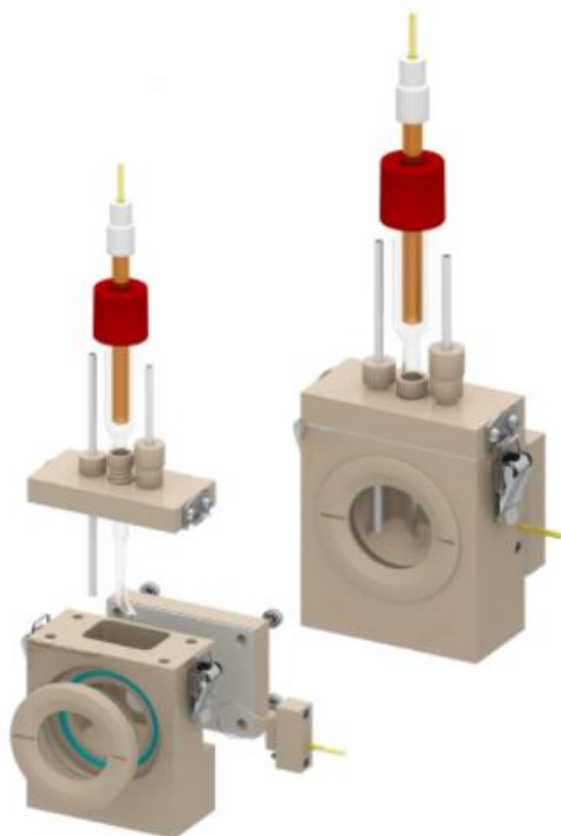
Volume (ml)
5mL
25mL
40mL

## Photoelectrochemical Cell Series

### Full PEEK Compact Photoelectrochemical Cell Model: K1300 – New 2025 Edition

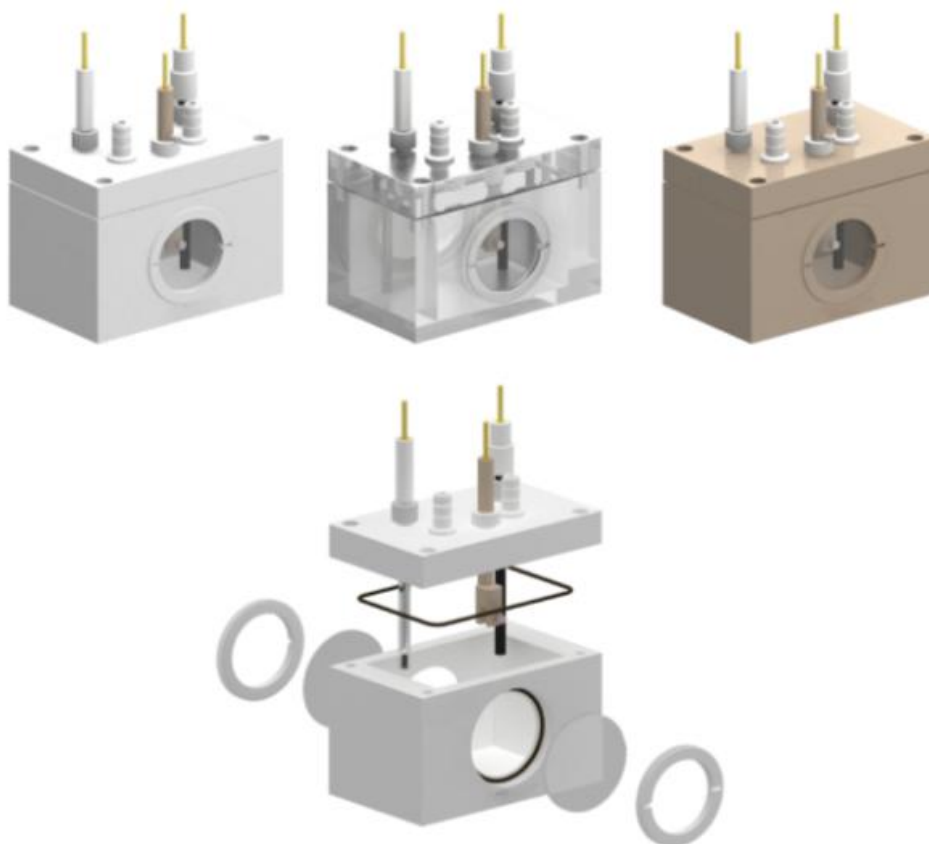
- This cell is a photoelectrochemical cell.
- The cell window is made of high-transparency quartz glass with a light transmittance exceeding 95%.
- The working electrode can accommodate non-standard samples. A fixed-area cavity of 1 cm<sup>2</sup> is provided by default, with optional customization available.
- The reference electrode is a light-shielded silver/silver chloride (Ag/AgCl) electrode.
- The cell includes a reference electrode salt bridge, with the distance between the salt bridge tip and the working electrode being less than 2 mm.
- The counter electrode is a platinum wire electrode featuring a newly designed side-mounted detachable structure, ensuring a tight and reliable seal around the working electrode.
- The working electrode sample is fixed securely via a rear clamping plate.

The main body of the cell is constructed from PEEK material, offering excellent mechanical strength and corrosion resistance.



## Photoelectrochemical Cell Series

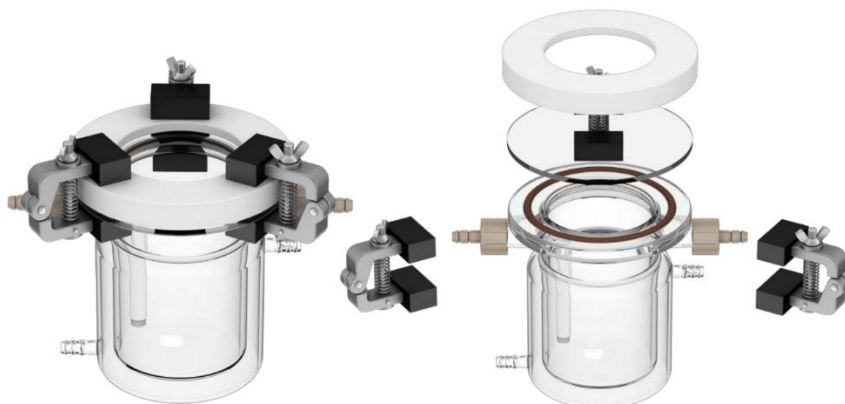
### Full PTFE /PMMA/ PEEK Electrolytic Cell (Customization)



- This cell is a photoelectrochemical cell.
- It features three electrode ports and an auxiliary inlet, designed as a fully sealed electrochemical cell.
- The cell includes gas inlet/outlet channels for purging and deoxygenation.
- **Applications:** Ideal for photoelectrochemical spectroscopy and photocatalytic electrochemical experiments.
- **Main Body Materials:** PTFE (Polytetrafluoroethylene), PEEK, Acrylic (Organic Glass & PMMA).
- **Window Material:** Quartz glass.
- **Sealing Material:** Fluororubber (FKM).

## Pure Photocatalytic Cell Series

Model: C033-1 (Without Electrodes)



C033-1

- Top-illuminated pure photocatalytic reaction chamber.
- Imported quartz light window with a light transmittance of 95% or above.
- The chamber is equipped with a gas inlet tube to disperse incoming gas, enhancing aeration efficiency.
- The jacketed layer incorporating a constant temperature water bath function. The constant temperature is achieved by continuously circulating temperature-controlled water in the jacket layer of the photocatalytic cell.
- Simple structure for easy operation with clamps.

Model: C033-2 (Without Electrodes)



C033-2

Model	Specifications
C033-1	50mL/100mL
C033-2	50mL/100mL

## Electrode Frame Series

### Simple Electrode Frame Model: E1000

Equipped with a small electrolytic cell (choose one of 7ml, 15ml, 25ml, 50ml)

The compatible electrodes of the electrolytic cell need to be purchased separately.



Model	Specifications
E1006	3 of $\Phi 6.5$ , 2 of $\Phi 2$
E1008	1 of $\Phi 8.5$ , 2 of $\Phi 6.5$ , 2 of $\Phi 2$
E1010	1 of $\Phi 10.5$ , 2 of $\Phi 6.5$ , 2 of $\Phi 2$
E1012	1 of $\Phi 12.5$ , 2 of $\Phi 6.5$ , 2 of $\Phi 2$
E1016	1 of $\Phi 16.5$ , 2 of $\Phi 6.5$ , 2 of $\Phi 2$

## Accessories

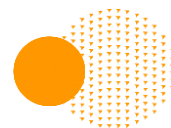
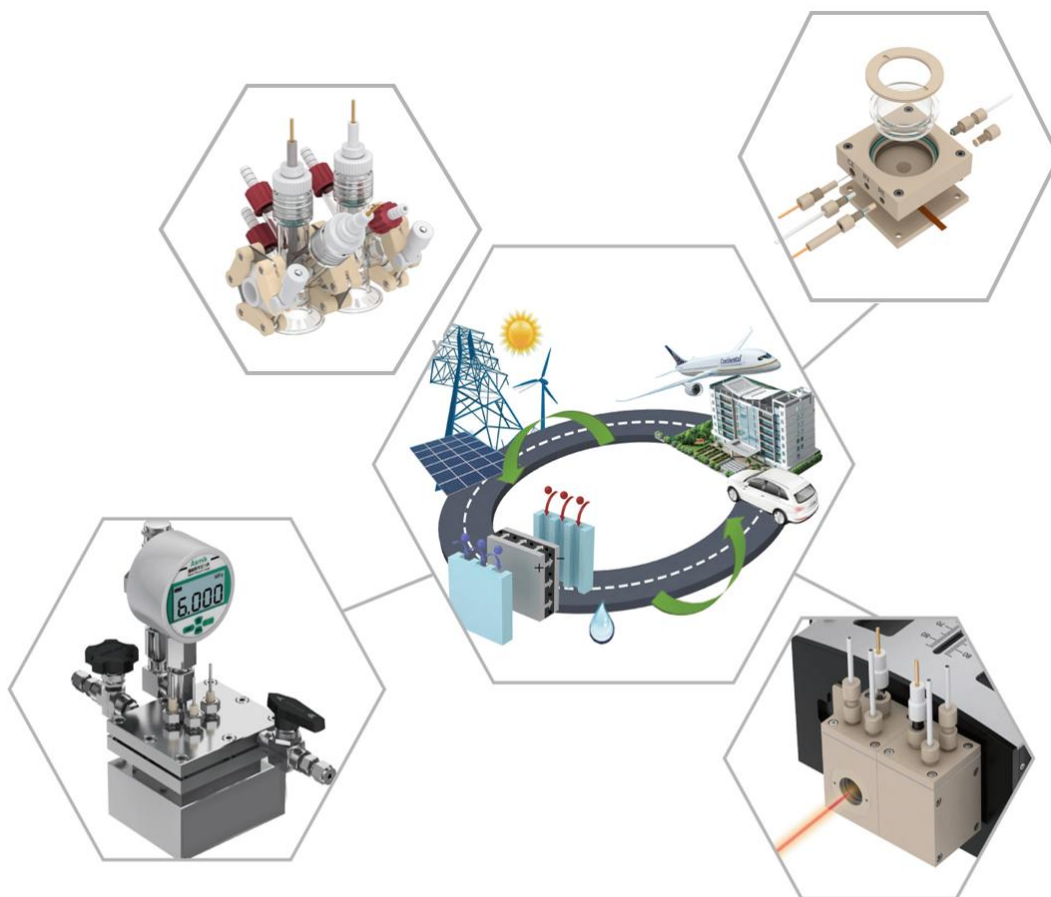


Name	Specifications
Chain	No.1
Chain	No.2
Chain	No.3
Quartz optical window	007-32
Inlet and outlet air pagoda joint	007-31
Aerator heads	007-30
F-type intake pipe	Joint 14#
F-type intake pipe	Joint 19#
Liquid seal tube	Joint 14#
Liquid seal tube	Joint 19#
Sealing screw	M10
Sealing screw	M14
Luggin Capillary	Φ10mm
Sand core salt bridge	140mm
Sand core salt bridge	170mm
Sand core salt bridge	Elbow*Φ10mm



# Electrochemical Product Catalogue

In-situ Cells  
Flow Cells  
High-Pressure Cells



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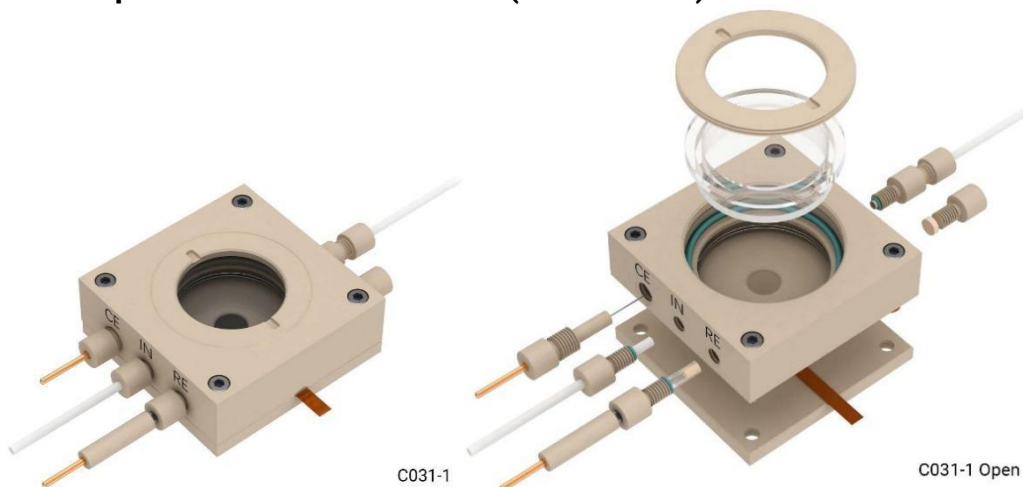
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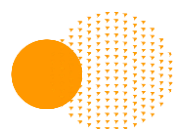
## Electrochemical In-situ Equipment Series

### In-situ Raman Spectroelectrochemical Cell (Basic Model) Model: C031-1



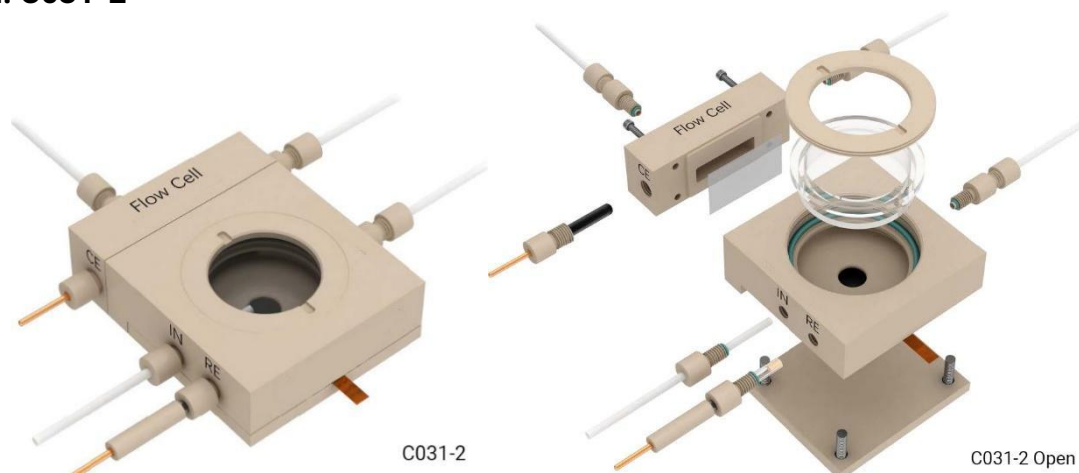
The in-situ electrochemical cell is meticulously designed to unravel the secrets of electrode materials, offering a front-row seat to the mesmerizing interplay of spectroscopic and morphological changes in your electrochemical experiments. The strategic placement of the working electrode just below the transparent window ensures that optical instruments capture every nuance through the quartz window.

- **Engineered Excellence:** The heart of this electrochemical cell is crafted from high-performance PEEK material, providing not only robustness but also swift assembly and disassembly for hassle-free cleaning – empowering you with efficiency at every step.
- **Versatile Applications:** Seamlessly transition between in-situ electrochemical testing in a flow system and swift electrolyte infusion through injection. This cell adapts to your experimental needs with unparalleled convenience.
- **Technical Specifications:**
  - Window Diameter: 37mm
  - Distance Between Working Electrode and Window: <6mm
  - Working Electrode Area: 1cm<sup>2</sup> (customizable upon request)
- **Customizable Electrode Options:** Personalize your experiments with a wide array of planar electrodes – gold, platinum, glassy carbon, ITO, FTO, carbon paper, and more. The working electrode, a canvas for your creativity, is available for separate purchase.
- **Premium Components:** Elevate your experiments with the included standard reference electrode (Ag/AgCl or Ag+) and a counter electrode as graphite rod or a platinum wire – a combination that ensures precision and reliability.



## Electrochemical In-situ Equipment Series

In-situ Raman Spectroelectrochemical Cell (2H Exchange Membrane Type)  
Model: C031-2



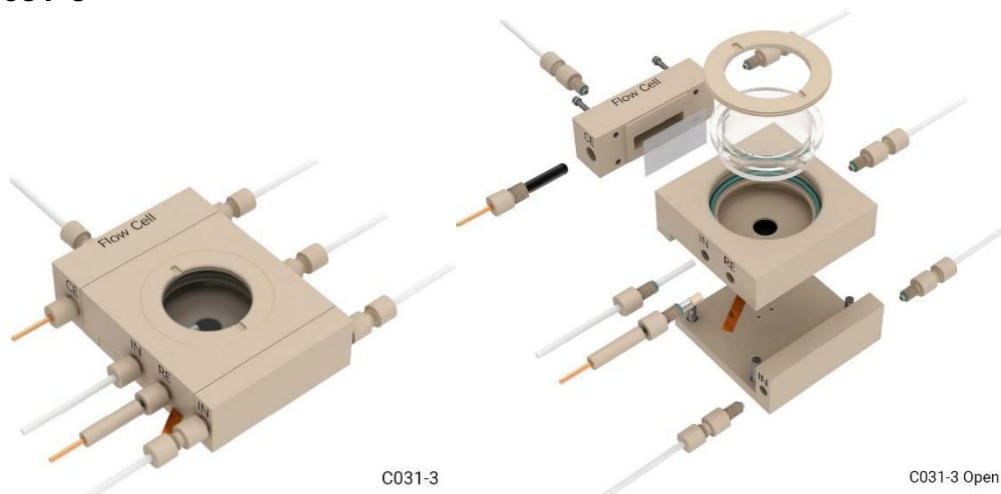
Dive into the intricate world of electrode materials with our cutting-edge in-situ electrochemical cell. Designed for unrivaled precision, this marvel places the working electrode strategically beneath a transparent window, granting optical instruments an exclusive view through the crystal-clear quartz window.

- **Crafted for Excellence:** Engineered with a robust PEEK body, this electrochemical cell ensures seamless assembly and disassembly, streamlining your workflow and simplifying the cleaning process for an unparalleled user experience.
- **Innovative Sealing Technology:** The dual compartments of this electrochemical cell boast a user-friendly screw-sealed design, allowing effortless membrane replacement. A strategically placed ion-exchange membrane isolates the cathode and anode chambers, mitigating any undesired influence from the anode.
- **Enhanced Electrode Efficiency:** Elevate your experiments with an integrated reference electrode sharing the chamber with the working electrode. Experience a great reduction in internal resistance ( $R_{drop}$ ), ensuring precision in every test.
- **Versatile Performance:** Seamlessly transition between in-situ electrochemical testing in a flow system and effortlessly fill the cell with electrolyte through injection, providing unparalleled flexibility for your experiments.
- **Technical Marvels:**
  - Distance Between Working Electrode and Window: <6mm
  - Window Diameter: 37mm (Sapphire, thickness 1mm)
  - Working Electrode Area: 1cm<sup>2</sup> (customizable upon request)
- **Tailor-Made Electrodes:** Explore a world of possibilities with our electrochemical cell supporting various planar working electrodes (gold, platinum, glassy carbon, ITO, FTO, carbon paper, etc.). Unleash your creativity, with electrode materials available for separate purchase.
- **Premium Components:** Elevate your experiments with the default inclusion of a Ag/AgCl reference electrode and an imported graphite rod counter electrode. Opt for an Ag<sup>+</sup> reference electrode and Pt wire counter electrode optionally.

## Electrochemical In-situ Equipment Series

In-situ Raman Spectroelectrochemical Cell (3H Gas Diffusion Type)

Model: C031-3



C031-3

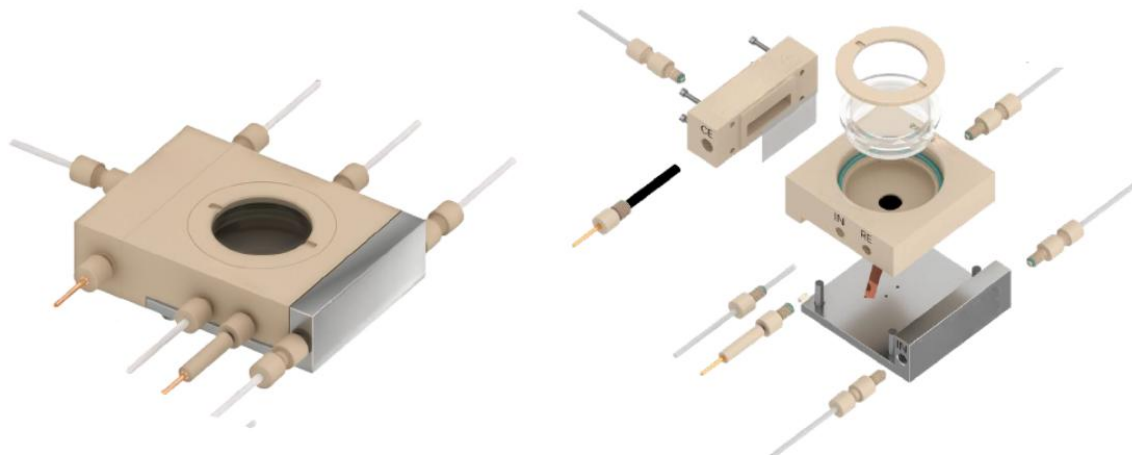
C031-3 Open

Crafted for precision, the working electrode is strategically positioned beneath a crystal-clear optical window, providing direct visibility for optical instruments.

- **Seamless Performance:** Engineered with a robust PEEK body, the cell ensures swift assembly and disassembly, simplifying the cleaning process for unparalleled user convenience.
- **Innovative Two-Chamber Design:** Revolutionize your experiments with our two-chamber design, featuring screw-sealed connections for easy membrane replacement. The ion membrane, to be provided by the user, effectively separates the cathode and anode chambers, mitigating the anode's impact on the cathode.
- **Gas Diffusion Advantage:** Elevate your experiments with the integrated gas channel in the lower part of the cathode chamber, enabling efficient gas diffusion for enhanced performance.
- **Reference Electrode Efficiency:** Reduced resistance ( $R_{drop}$ ) with our in-built reference electrode, strategically located in the same chamber as the working electrode.
- **Versatile Functionality:** Seamlessly transition between in-situ electrochemical testing in a flow system and effortlessly fill the cell with electrolyte through injection.
- **Technical Precision:**  
 Distance Between Working Electrode and Optical Window: <6mm  
 Optical Window Diameter: 37mm (Sapphire, thickness 1mm)  
 Working Electrode Area: 1cm<sup>2</sup> (customizable upon request)
- **Tailor-Made Electrodes:** Explore a world of possibilities with our electrochemical cell supporting various electrodes, including gas-diffusion electrodes. Alternatively, choose from materials like metal, glassy carbon, ITO, FTO, etc.
- **Premium Components:** Default inclusion of a Ag/AgCl reference electrode and an imported graphite rod counter electrode. Opt for an Ag<sup>+</sup> reference electrode and Pt wire counter electrode as alternative options at no extra cost.

## Electrochemical In-situ Equipment Series

In-situ Raman Spectroelectrochemical Cell (Gas Diffusion - Serpentine Gas Path Type) Model: C031-3S



This is an upgraded version of the C031-3 in-situ Raman cell, with a serpentine flow channel design in the gas chamber, which increases the contact time between the gas and the catalyst, thus enabling the gas to participate in the experimental reaction more effectively.

- **Innovative Two-Chamber Design:** Revolutionize your experiments with our two-chamber design, featuring screw-sealed connections for easy membrane replacement. The ion membrane, to be provided by the user, effectively separates the cathode and anode chambers, mitigating the anode's impact on the cathode.
- **Gas Diffusion Advantage:** Elevate your experiments with the integrated serpentine gas channel in the lower part of the cathode chamber, enabling efficient gas diffusion for enhanced performance.
- **Versatile Functionality:** Seamlessly transition between in-situ electrochemical testing in a flow system and effortlessly fill the cell with electrolyte through injection.
- **Technical Precision:**  
 Distance Between Working Electrode and Optical Window: <6mm  
 Optical Window Diameter: 37mm (Sapphire, thickness 1mm)  
 Working Electrode Area: 1cm<sup>2</sup> (customizable upon request)
- **Tailor-Made Electrodes:** Explore a world of possibilities with our electrochemical cell supporting various electrodes, including gas-diffusion electrodes. Alternatively, choose from materials like metal, glassy carbon, ITO, FTO, etc.
- **Premium Components:** Default inclusion of a Ag/AgCl reference electrode and an imported graphite rod counter electrode. Opt for an Ag<sup>+</sup> reference electrode and Pt wire counter electrode as alternative options at no extra cost.

## Electrochemical In-situ Equipment Series

In-situ Raman Spectroelectrochemical Cell (Gas Diffusion – PEEK Serpentine Gas Path Type) Model: C031-S



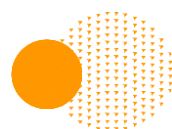
C031-S



C031-S Open

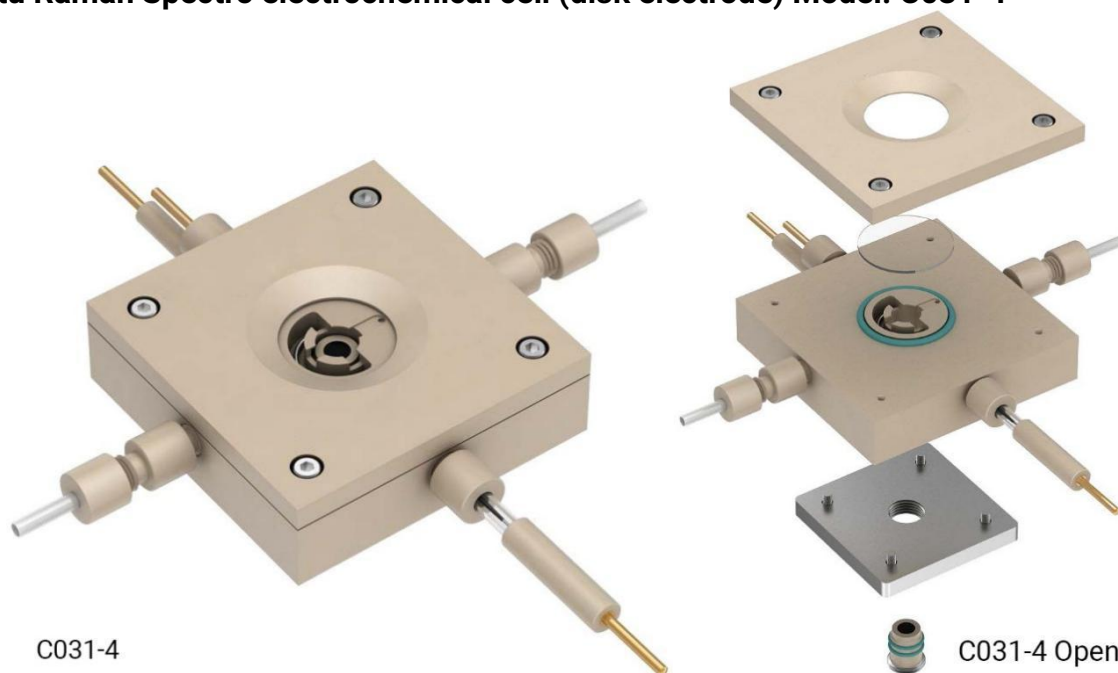
Designed for studying in-situ spectral and morphological changes of electrode materials in electrochemical experiments. The working electrode is positioned directly below a transparent window, allowing optical instruments to observe the working electrode through a quartz window.

- **Three-Chamber Design:** The electrochemical cell consists of three chambers: gas chamber, working electrode chamber, and reference electrode chamber. These chambers are isolated from each other using a gas diffusion electrode (user-supplied) and an ion membrane (user-supplied), primarily for in-situ Raman testing of gas diffusion electrodes.
- **Gas Chamber Design:** The gas chamber adopts a serpentine flow field, significantly increasing the contact time between gases and the gas diffusion electrode compared to C031-3 model, ensuring more efficient catalytic reactions.
- **Cell Features:** Working electrode uses a gas diffusion electrode (user-supplied) with a positioning area of 1cm<sup>2</sup> and an imported flat sapphire window with light transmittance exceeding 95%. The flat window has a diameter of 38mm and is positioned less than 3mm from the working electrode, allowing universal compatibility with most Raman spectrometers. Reference electrode (supplied with AgCl or Ag<sup>+</sup> electrode) is in the same chamber as the working electrode, effectively reducing the resistivity (R drop).
- **Materials:** Cell body: PEEK; Window material: Sapphire, diameter: 38mm
- **Working Electrode Options:** Typically employs a gas diffusion electrode for use with gas channels, but can also use materials like metal sheets, glassy carbon sheets, ITO, FTO, etc. Working electrode material needs to be purchased separately.
- **Standard Configuration:** Comes with Ag/AgCl reference electrode and an imported graphite rod for the counter electrode; can be replaced at no extra cost with Ag<sup>+</sup> reference electrode or platinum wire counter electrode.



## Electrochemical In-situ Equipment Series

In-situ Raman Spectro electrochemical cell (disk electrode) Model: C031-4



C031-4

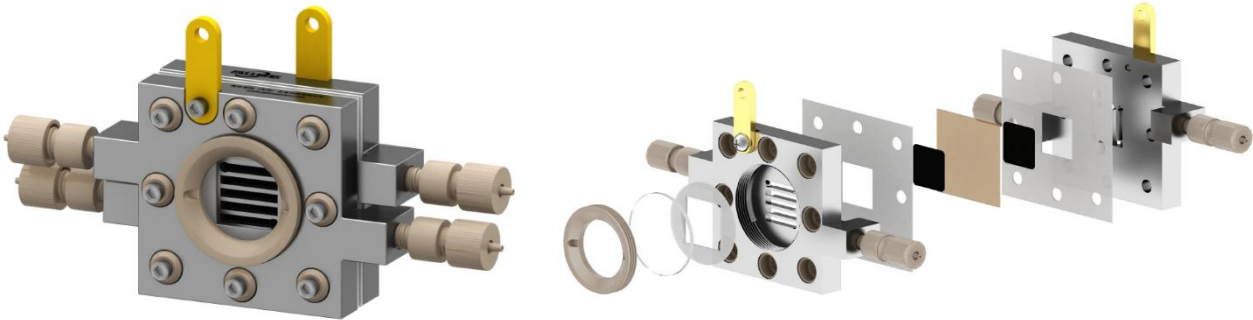
C031-4 Open

Designed to investigate in-situ spectral and morphological changes of electrode materials in electrochemical experiments. The working electrode (WE) is positioned directly below a transparent window, allowing optical instruments to observe the working electrode through a quartz window.

- **Material and Assembly:** The main body of the electrochemical cell is constructed from PEEK and high-purity titanium; it can be quickly assembled and disassembled, facilitating easy cleaning.
- **Versatile Testing:** The electrochemical cell is suitable for in-situ electrochemical testing in flow systems and can also accommodate straightforward electrolyte filling through injection.
- **Specifications:**  
Window diameter: 25mm (Sapphire, thickness 1mm)  
Distance from the working electrode to the window: <6mm
- **Configurable Electrodes:** Standard working electrode is a 5mm glassy carbon electrode. It can be replaced with disk-shaped electrodes such as gold, platinum, silver, etc., based on specific requirements (additional cost may apply).
- **Standard Electrode Configuration:** Comes with a reference electrode (Ag/AgCl or Ag<sup>+</sup> electrode) and a counter electrode (platinum wire electrode).

## Electrochemical In-situ Equipment Series

In-situ Raman Spectro electrochemical cell Model: C031-X



### Description

This membrane electrode electrolyzer is designed for in-situ Raman spectroscopy studies, enabling real-time observation and analysis of electrode surface reactions and bubble evolution during electrochemical processes.

### Product Features

- Flow channel is engineered with enhanced shear-force design to facilitate efficient bubble removal
- Optical window material options: Quartz or Sapphire
- Electrode endplate material: Titanium or Nickel for superior corrosion resistance
- Current collector tab material: Gold-plated copper for improved conductivity and reduced resistance
- Quick-connect fittings made of PEEK for strong chemical resistance, with internal shear-force enhancement
- Channel dimension: 14 × 14 mm (customizable upon request)
- Distance from window to sample surface: < 5 mm, optimized for high Raman signal efficiency

### Specifications

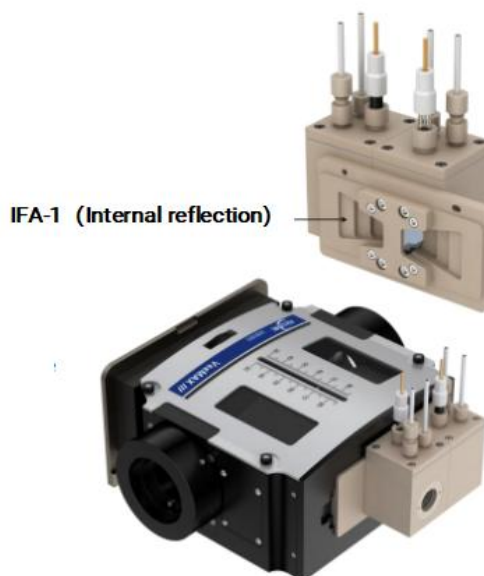
- Application Type: In-situ Raman electrochemical measurement
- Window Options: Quartz / Sapphire
- Flow Field: shear-force enhanced channel structure
- Material Options: Titanium or Nickel endplates / Gold-plated copper tabs / PEEK connectors
- Channel Size: 14 × 14 mm (customizable)
- Window-to-sample distance: < 5 mm

## Electrochemical In-situ Equipment Series

### In-situ Infrared H-Type Electrochemical Cell with Internal Reflection Model: IFA

- **Working Electrode:** Single-crystal silicon
- **Counter Electrode:** Graphite
- **Reference Electrode:** Silver chloride-silver electrode
- **Infrared Window:** Single-crystal silicon
- **Anode/Cathode Gas Inlet:** Present
- **Volume:** <20ml, requires integration with compatible optical pathways
- **Crystal:** Si

*(Among conventional infrared window materials such as Ge, ZnSe, and Si, Ge is relatively reactive. Cu and Ag thin film electrodes on Ge pillars usually yield suitable electrochemical responses only in the negative direction of the open circuit potential scan due to Ge's high anodic current during positive potential scans. This can mask the electrochemical response of metal electrodes, leading to the detachment of metal films. Similarly, ZnSe is unstable in acidic or alkaline solutions, making it unsuitable as a window material for electrochemical ATR-SEIRAS.)*



### Variable Incidence Angle Optical Stage

Offers continuously adjustable incidence angles and a variety of crystal plates to selectively control penetration depth.

High throughput (over 50% for a 45-degree ZnSe crystal), minimizing sampling time and enabling detection of components in low-concentration complex samples.

Continuously adjustable angles from -30 to 80 degrees.

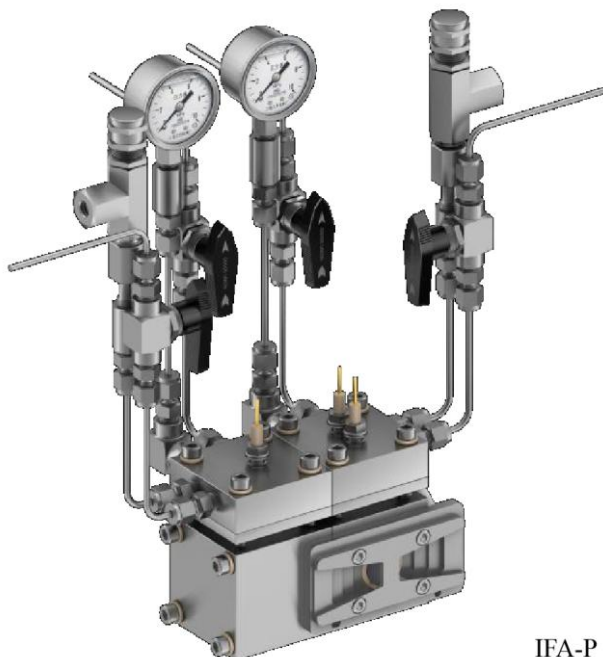
Ideal selection of penetration depths from 0.4 to 46 micrometers for in-depth analysis studies.

High-throughput for high-quality spectra.



## Electrochemical In-situ Equipment Series

High-pressure in-situ infrared testing cell Model: IFA-P



IFA-P

This reaction cell is an upgraded high-pressure version based on the atmospheric H-type in-situ infrared test cell technology. The cell body is fully constructed from high-purity titanium, secured with stainless steel bolt fastening for sealing. The electrodes adopt an internal fixation design, ensuring stable operation and safety.

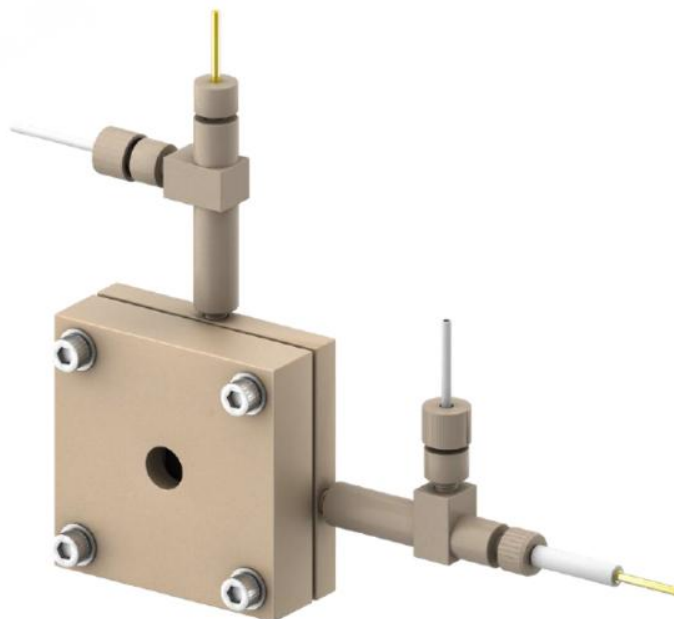
- **Infrared Window Material:** Single-crystal silicon (CaF<sub>2</sub> / ZnSe windows available upon customization)
- **Cell Body Material:** High-purity titanium
- **Cavity Material:** High-purity PTFE
- **Cavity Volume:** 20 mL + 20 mL
- **Observation Window Material:** High-pressure resistant sapphire
- **Maximum Operating Pressure:** 6 MPa
- **Electrodes Configuration (standard):** High-pressure electrochemical three-electrode set – glassy carbon electrode holder, Ag/AgCl electrode, platinum sheet electrode

**Note:**

External optical coupling system is required when using this cell for infrared measurements.

## Electrochemical In-situ Equipment Series

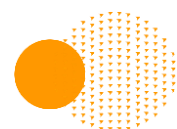
In-situ infrared testing chamber (transmission) Model: Infrared light



- **Working Electrode:** Platinum mesh
- **Counter Electrode:** Platinum electrode
- **Reference Electrode:** Platinum electrode
- **Infrared Window:** CaF<sub>2</sub> (Calcium Fluoride)
- **Liquid Layer Thickness:** 0.5mm
- **Cell Body Material:** PEEK
- **Inlet/Outlet for Gases:** Included

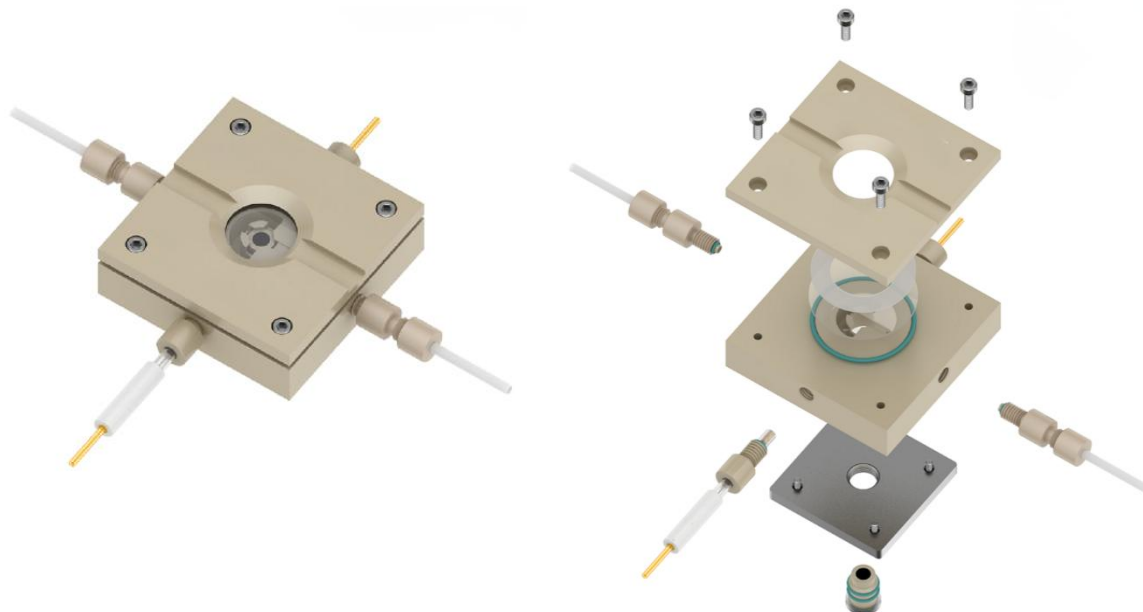
Product Name	Model	Remark
Infrared ATR (H-type exchange membrane)	IFA-1 (Internal reflection)	Equipped with reference and counter electrodes
Infrared ATR (H-type exchange membrane)	IFA-2 (External reflection)	Equipped with gauge and Φ10mm glass carbon electrodes
Infrared ATR (H-type exchange membrane)	IFA-P (High Pressure-Internal reflection)	Equipped with electrodes
Optical table with adjustable incident angle	VeeMAX III	Can refract from the side and bottom
Infrared Light (transmission)		Equipped with electrodes
Crystal Gold Plating Cell		/
Crystal Gold Plating Solution	50mL	/

Support the modification of existing optical paths to enable magnetic stirring and enhance infrared signals.  
All sizes listed are common sizes, can be customized according to requirements.



## Electrochemical In-situ Equipment Series

In-situ XRD electrochemical cell Model: C031-XRD



The in-situ electrochemical cell is designed for studying the in-situ spectra and morphological changes of electrode materials in electrochemical experiments. The working electrode is positioned directly below a transparent window, allowing optical instruments to observe the working electrode through a quartz window.

- **Material and Assembly:** The main body of the electrochemical cell is made of PEEK with high-purity titanium, enabling rapid assembly and disassembly for easy cleaning.
- **Versatile Testing:** This electrochemical cell can be used for in-situ electrochemical testing in a flow system and can also accommodate the injection of a concise filling electrolyte.
- **Specifications:**
  - Window Material: PI (Polyimide)
  - Working Electrode Distance from Window: <6mm
- **Configurable Electrodes:** 5mm glassy carbon electrode; can be replaced with disk-shaped electrodes such as gold, platinum, silver, etc., based on requirements (additional charges may apply).
- **Standard Electrode Configuration:** (AgCl or Ag<sup>+</sup> electrode) and counter electrode (platinum wire electrode) are included.

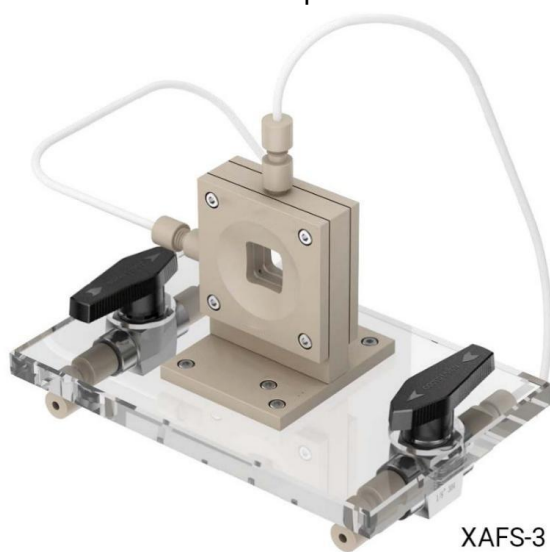
## Electrochemical In-situ Equipment Series

### In-situ X-ray absorption spectroscopy reaction cell Model: XAFS

A specialized electrochemical reaction cell designed for in-situ X-ray absorption spectroscopy (XAFS) with synchrotron X-rays.

**Key Features:**

- Available in single-cell, dual-cell (H-type with interchangeable membranes), and dedicated XAFS-3 models designed for gas operations.
- The XAFS-2 electrochemical cell incorporates an H-type design with interchangeable membranes, facilitating the separation of the anode and cathode.
- The cell body includes inlet and outlet ports to meet the requirements of different atmospheres and ensure gas-tightness for diverse electrochemical reaction conditions.
- Configurable as a two-electrode or three-electrode system with a specially customized working electrode, while the other two electrodes can be tailored according to customer specifications.
- Simple and quick installation of the device with convenient cleaning of individual components.
- The main cell body is constructed from PEEK material, and the volume can be customized based on customer requirements.
- Optical window material: Kapton film.

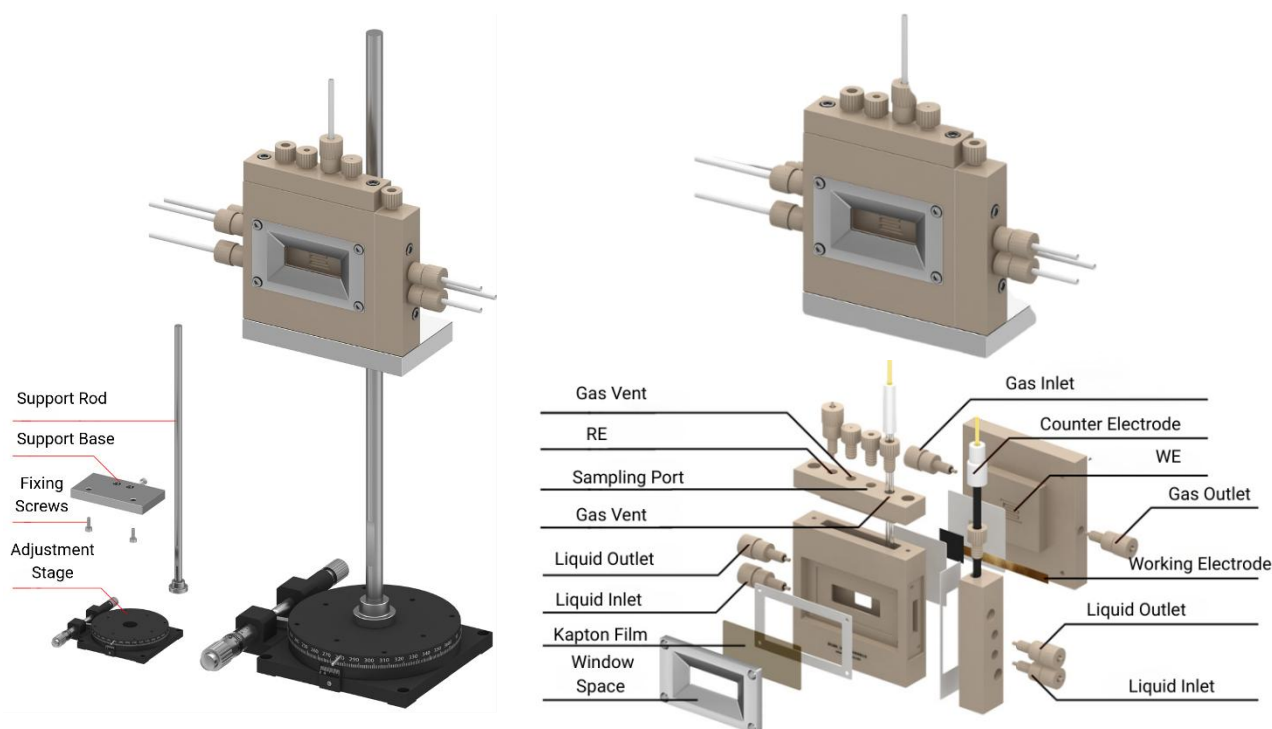


All sizes listed are common sizes, can be customized according to requirements.

Model	Remark
XAFS-1	Single-Chamber
XAFS-2	Dual-Chamber H-Type
XAFS-3	Electrodeless, for pure gas
XAFS-4	Gas Diffusion Type

## Electrochemical In-situ Equipment Series

In-situ X-ray absorption spectroscopy reaction cell Model: XAFS-4



This in-situ 2H-type electrochemical flow cell is designed to support real-time gas-involved reaction studies, enabling researchers to conduct operando / in-situ characterization under controlled gas flow conditions. The structure is optimized for gas diffusion, optical access, and X-ray alignment, making it suitable for advanced electrochemical catalysis research such as CO<sub>2</sub>RR, ORR, HER, OER, flow batteries and other energy & catalytic reaction mechanisms.

### Key Functional Features

- **Gas Diffusion Design:** Equipped with a high-efficiency gas diffusion structure to ensure uniform gas distribution within the reaction environment, significantly improving response speed and experimental stability.
- **Wide-Angle Kapton Viewing Window:** Utilizes Kapton film as the observation window, providing up to **120° ultra-wide viewing angle**, offering a larger optical inspection area and enhanced monitoring capability.
- **Optimized Electrode Spacing:** The Kapton window and gas diffusion electrode are positioned at reduced distance to enhance signal sensitivity and improve real-time detection accuracy.
- **Flexible Cavity Module:** Gas diffusion cavity can be interchangeably replaced with a transparent cavity, supporting multiple electrochemical characterization modes and expanding usability across diverse test scenarios.
- **Compatible Electrode Configuration:** Supports both single-chamber and H-type membrane structure configurations, ensuring compatibility with conventional electrochemical experimental workflows and enabling convenient method comparison.
- **Fine Adjustment Support:** Can be equipped with precision alignment stages to achieve fine angular X-ray positioning control, meeting the stringent alignment requirements of advanced in-situ experimental setups.

## Electrochemical In-situ Equipment Series

### Mass spectrometry-infrared spectroscopy coupling cell Model: MS-IFA

An electrolytic cell that integrates mass spectrometry with in-situ infrared spectroscopy.

#### Key Features:

- The electrolytic cell supports testing with flowing phases, enhancing versatility.
- Window material: Single crystal silicon, ensuring optical clarity and durability.
- Comes standard with a reference electrode (AgCl or Ag<sup>+</sup>) and a counter electrode (platinum wire), providing essential components for precise electrochemical measurements.



### In-situ mass spectrometry flow electrochemical cell Model: MS-FC

An electrolytic cell designed for the combined use of mass spectrometry and electrochemistry.

#### Key Features:

- The electrolytic cell supports testing with flowing phases, enhancing flexibility in experimental setups.
- The working electrode shell of the electrolytic cell can be customized according to experimental requirements.
- Comes standard with a reference electrode (AgCl or Ag<sup>+</sup>) and a counter electrode (platinum wire), providing essential components for precise electrochemical measurements.



MS-FC

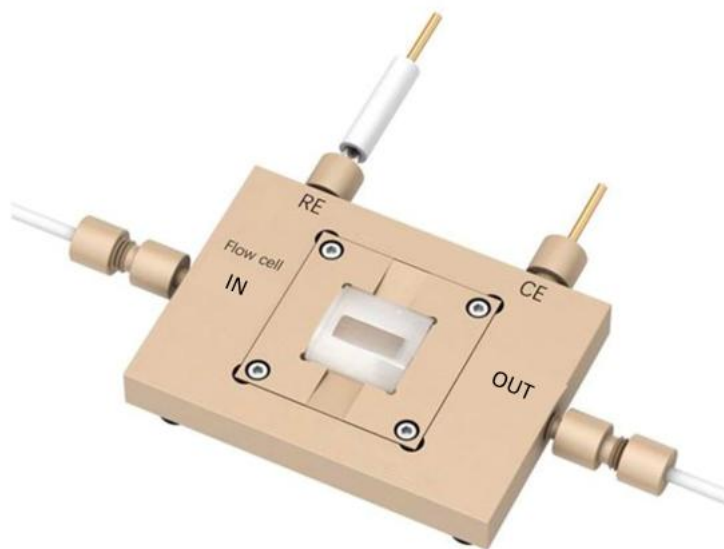


MS-FC Open

## Electrochemical In-situ Equipment Series

### In-situ and spectroelectrochemical cell Model: 19008

- Internal dimensions: 20\*55mm
- The electrolytic cell supports testing with flowing phases.
- The working electrode shell of the electrolytic cell can be customized according to experimental requirements.
- Comes standard with a reference electrode (Ag/AgCl or Ag<sup>+</sup>) and a counter electrode (platinum wire), providing essential components for precise electrochemical measurements.



## Electrochemical In-situ Equipment Series

### In-situ UV electrochemical cell Model: UV2600-1

This electrochemical cell was co-developed with Lanzhou University. It is compatible with Shimadzu UV2600.

#### Key Features:

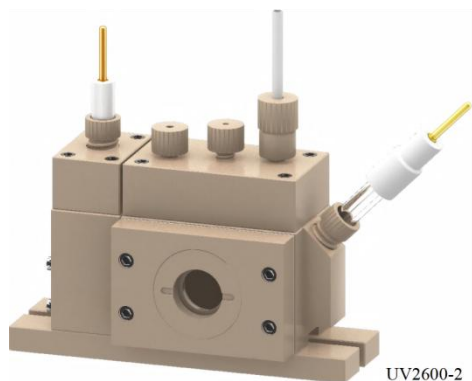
- Reference Electrode: Accommodates standard 6 mm diameter reference electrodes
- Counter Electrode: Compatible with platinum wire electrode or graphite rod electrode
- Working Electrode: ITO electrode
- Cell Body Material: PEEK
- Window Material: Sapphire glass



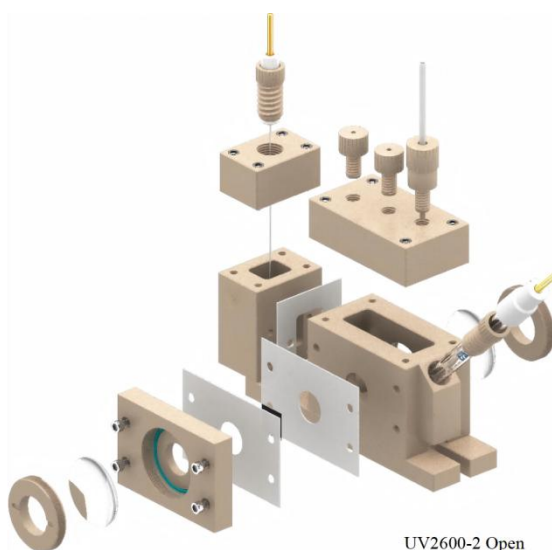
UV2600-1

### In-situ UV electrochemical cell Model: UV2600-2

This upgraded version features an H-type cell body on the UV2600-1, with a replaceable membrane design. The working chamber supports gas inlet/outlet.



UV2600-2



UV2600-2 Open

Model	Remark
UV2600-1	Single-Chamber
UV2600-2	Dual-Chamber H-Type

All sizes listed are common sizes, can be customized according to requirements.

## Electrochemical In-situ Equipment Series

### In-Situ Mass Spectrometry Flow Electrochemical Cell Model: MS-FC

#### Description

The MS-FC in-situ mass spectrometry flow electrochemical cell (PM-DEMS) enables real-time qualitative & quantitative gas product analysis generated during electrochemical reactions. By combining electrochemistry, gas-permeable membrane extraction and fast MS detection, it delivers rapid response with minimal delay for studying intermediates, gas evolution behavior and reaction kinetics.

#### Product Features

Dual liquid / gas inlet design suitable for electrochemical, photo / thermal catalysis and battery gas analysis

High sensitivity, high stability detection – consistent with electrochemical reaction behavior

Millisecond response and fast mass scan for real-time online measurement

Dual ion source + electron multiplier detection achieving ppb-level sensitivity

Temperature-controlled gas path to prevent condensation interference

Multiple signal I/O – easy linkage with external instrument automation

Built-in filament protection for longer lifetime

Customizable sampling: pre-reaction and multi-channel sampling supported

Optional customized electrochemical and battery test modules

#### Specifications

Detection range: ppb to high gas concentration (depending on MS config)

Inlet structure: dual independent gas/liquid channels

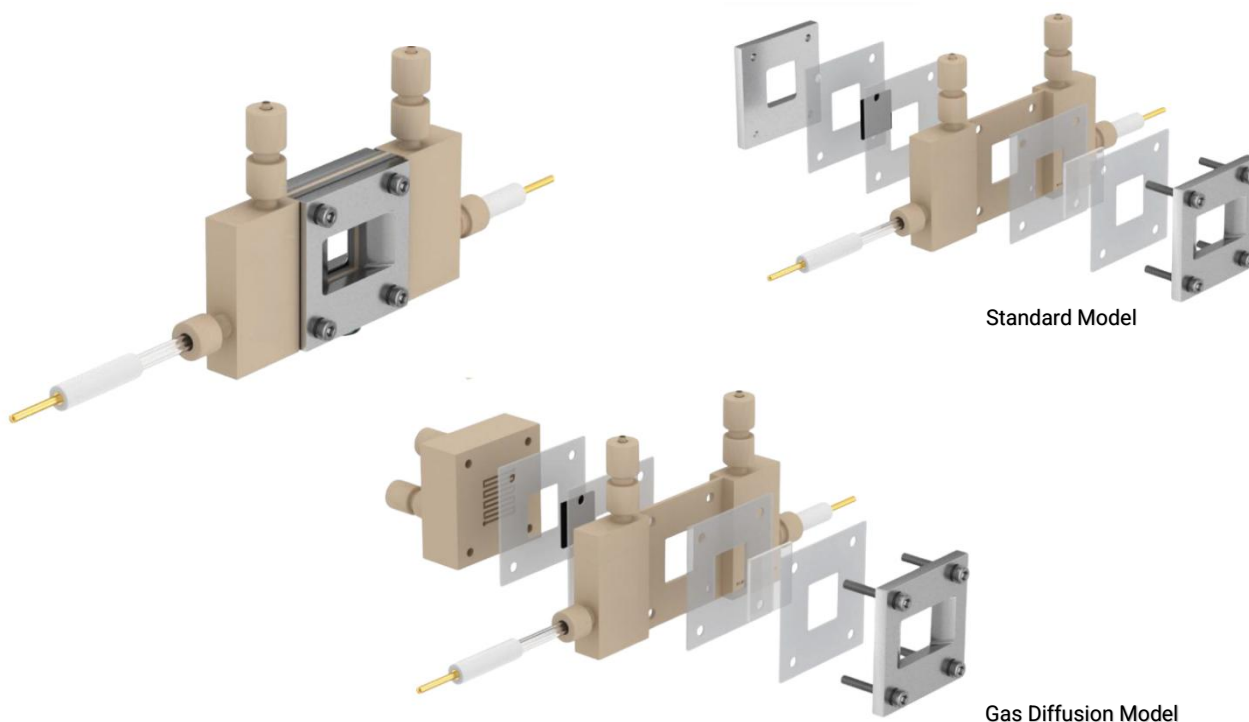
Software: multi-gas real-time qualitative & quantitative analysis

Custom module availability: multi-channel sampling / electrochemical cell modules / battery modules



## Electrochemical In-situ Equipment Series

Multi-functional in-situ testing electrochemical cell Model: In-situ-X



### Overview

This electrolyzer is a multifunctional FlowCell-type electrochemical cell capable of integrating both membrane electrode and gas diffusion functions. The electrolyte enters through the reference electrode chamber, comes into contact with the working electrode, and flows out through the counter electrode chamber, forming a closed-loop structure for stable operation.

### Design and Structure

The working electrode interface supports two configurations: standard and gas diffusion types. The chamber features a serpentine flow channel with a thickness of 1.2 mm and a flow field area of  $15 \times 15$  mm, ensuring efficient fluid management and electrochemical performance.

### Features and Materials

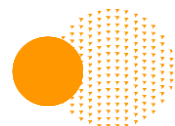
This multifunctional design allows for interchangeable observation windows to accommodate different analytical methods, including:

Quartz and sapphire (UV, Raman)

Kapton film (XAFS)

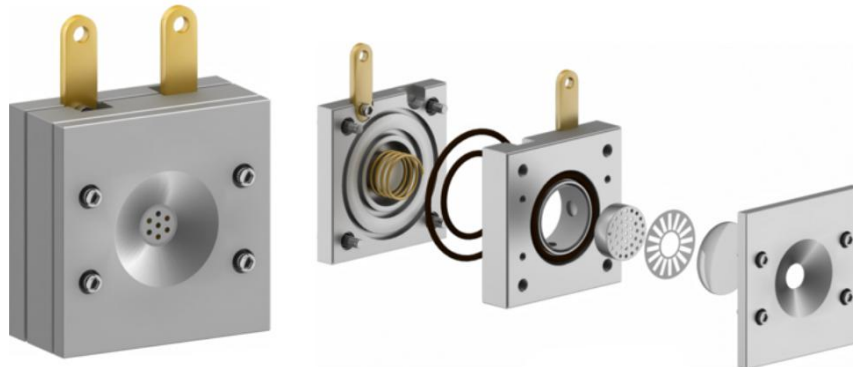
Beryllium window (XRD)

**Equipped as standard with an Ag/AgCl reference electrode, a platinum counter electrode, and a standard sapphire observation window.**



## Li-ion In-situ Equipment Series

In-situ Raman two-electrode battery testing cell Model: B002-RM



The In-situ Raman Electrochemical Cell is designed for studying the in-situ spectra and morphological changes of electrode materials in electrochemical experiments.

**Material and Assembly:** Constructed with high-purity titanium material.

**Versatile Testing:** Features both positive and negative poles, separated by a membrane (to be provided by the user).

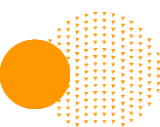
- Demonstrates outstanding sealing capability and assembly reproducibility. Evaluation is facilitated by adjusting the load using a spring.
- Easy to dismantle without damaging the sample after charge/discharge testing.
- Quick assembly and disassembly for convenient cleaning.

### Specifications

- Connectable to charge/discharge equipment, suitable for a wide range of battery cycling and characteristic tests.
- Easy to use, requiring only the tightening of screws, with excellent chemical corrosion resistance ensured by O-rings.
- Assembled in a glovebox, the cell can be used outdoors.

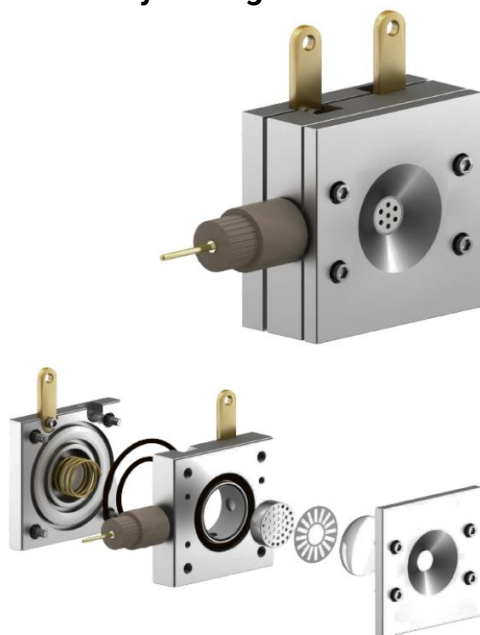
### Configurable Electrodes:

- Working electrode distance from the optical window: <2mm.
- Optical window diameter: 8mm.
- Dimensions of the electrochemical cell: 50\*50\*20mm.



## Li-ion In-situ Equipment Series

In-situ Raman three-electrode battery testing cell Model: B003-RM



Based on the B002-RM architecture, this in-situ Raman electrochemical cell integrates a reference electrode (Ag/AgCl) and is specifically designed for operando Raman spectroscopy and morphology monitoring of electrode materials during electrochemical reactions.

### Key Functional Features

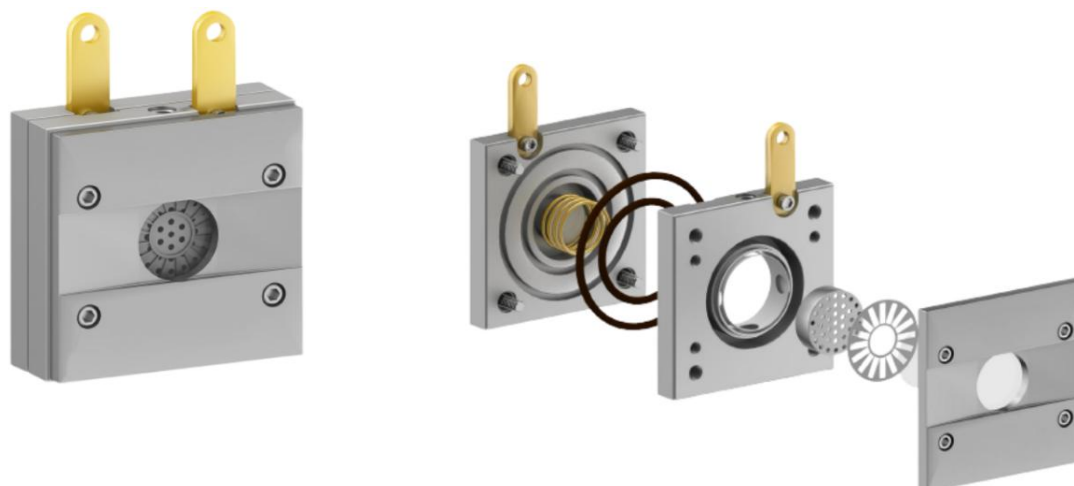
- **Dual Electrode Configuration:** Supports both positive and negative electrode connections, with membrane isolation (membrane supplied by user) to ensure stable and independent half-cell operation.
- **High Sealing Performance:** Excellent leak-tightness and assembly reproducibility, with adjustable loading via spring mechanism for consistent pressure control during measurement.
- **User-Friendly Operation:** Simple screw-based assembly, chemical-resistant O-ring sealing, and quick setup for battery cycling experiments and characterization tests.
- **Glovebox Compatibility:** Designed for easy assembly inside a glovebox; airtight structure allows safe transfer to ambient environment for testing or storage without exposure impact.
- **Easy Maintenance and Handling:** Rapid assembly and disassembly enables safe post-testing cell opening, effortless sample retrieval, and convenient cleaning.

### Specifications

- Distance from working electrode to optical window: < 2 mm
- Optical window diameter: 8 mm
- Overall cell dimension: 50 × 50 × 24 mm

## Li-ion In-situ Equipment Series

In-situ XRD two-electrode battery testing cell Model: B002-XRD



The electrochemical cell is crafted from high-purity titanium. The electrochemical cell features positive and negative poles, with isolation facilitated by a user-provided membrane.

**Sealing and Reproducibility:** Exceptional sealing properties and assembly reproducibility characterize the electrochemical cell.

**Load Evaluation Mechanism:** Evaluation of the electrochemical cell involves adjusting the load using a spring mechanism.

**Versatile and Simple Utilization:** Connected to charging/discharging equipment, the electrochemical cell finds application in a wide range of battery cycling tests and characteristic evaluations. The electrochemical cell is designed for easy disassembly post charging/discharging tests, safeguarding the integrity of the samples. The electrochemical cell requires only the tightening of screws, with chemically resistant O-rings ensuring outstanding airtightness.

**Adaptability for Glovebox Assembly:** Assembled within a glovebox, the electrochemical cell can be seamlessly used in outdoor settings.

**Quick Assembly and Disassembly:** Swift assembly and disassembly of the electrochemical cell facilitate convenient cleaning.

**Optical Specifications:**

Working electrode distance from the optical window: <2mm.

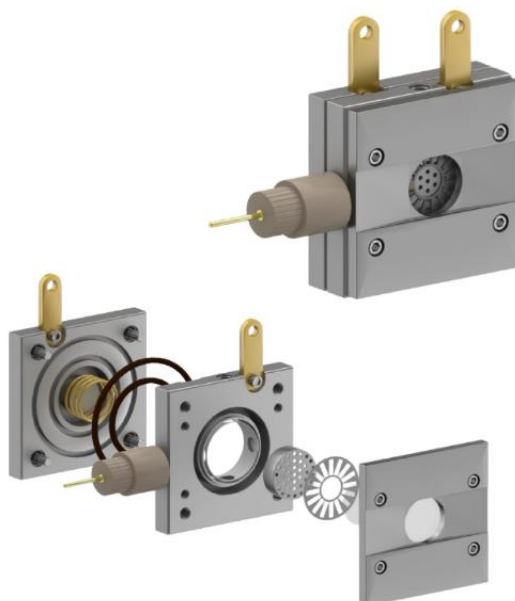
Optical window diameter: 8mm.

Channel width: 8mm.

Dimensions (length, width, height): 50\*50\*20mm.

## Li-ion In-situ Equipment Series

In-situ XRD three-electrode battery testing cell Model: B003-XRD



### Description

Evolved from the B002-XRD platform, this in-situ electrochemical cell integrates a reference electrode (Ag/AgCl) and is manufactured from high-purity titanium to deliver exceptional chemical stability and reliability for operando electrochemical research and advanced materials testing.

### Key Functional Features

**Dual Electrode Configuration:** Supports positive and negative electrode connection, with membrane isolation (membrane provided by user) for stable half-cell operation and flexible test setups.

**Adjustable Loading Mechanism:** Spring-based pressure adjustment enables controlled, reproducible evaluation conditions during battery cycling and electrochemical characterization.

**Simple Operation & Reliable Sealing:** Screw-based assembly combined with chemical-resistant O-ring sealing ensures excellent airtightness prior to charge/discharge cycling and simplifies routine experimental workflows.

**Glovebox-Compatible Workflow:** Designed for assembly inside a glovebox; the sealed cell can be safely transferred out for external testing. Rapid disassembly allows safe retrieval of samples post evaluation without structural disturbance.

**Easy Cleaning & Reuse:** Quick assembly/disassembly makes maintenance and cleaning convenient, supporting efficient multi-sample experimental sequences.

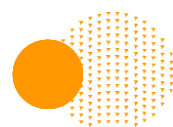
### Specifications

Distance from working electrode to optical window: < 2 mm

Optical window diameter: 8 mm

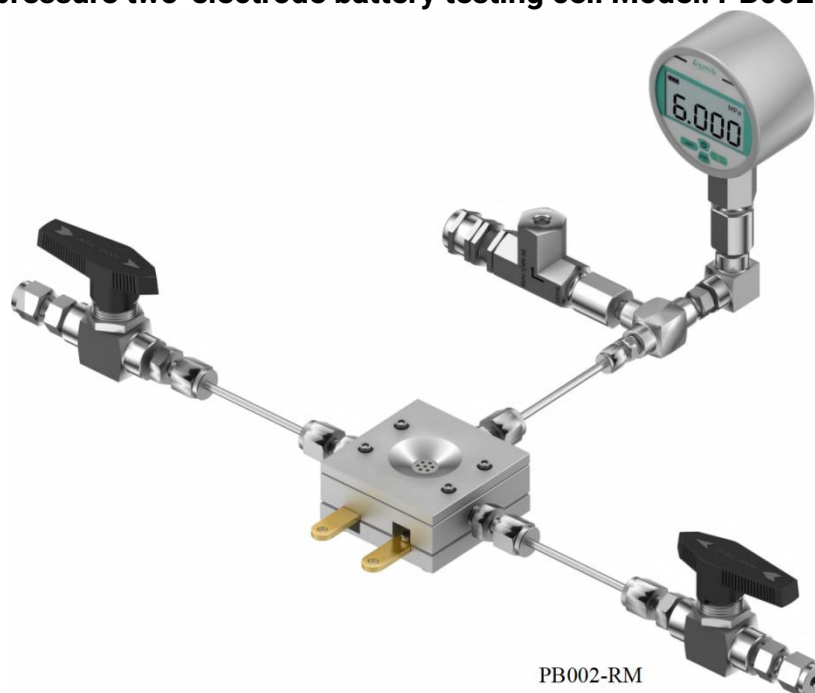
Channel width: 8 mm

Overall dimensions: 50 × 50 × 24 mm



## Li-ion In-situ Equipment Series

In-situ Raman pressure two-electrode battery testing cell Model: PB002-RM



### Description

Based on the B002-RM platform and integrated with a pressure system capable of withstanding up to 6 MPa, this in-situ Raman electrochemical cell is designed for operando spectroscopy and morphology analysis of electrode materials during electrochemical testing.

### Key Functional Features

**High-Purity Titanium Structure:** Constructed from high-purity titanium for exceptional chemical resistance, mechanical strength, and long-term stability in demanding electrochemical environments.

**Dual Electrode Configuration:** Supports positive and negative electrode connections, with membrane isolation (membrane supplied by user) for controlled half-cell evaluation.

**Adjustable Loading Mechanism:** Spring-based loading enables precise contact pressure adjustment, supporting reliable charge/discharge performance evaluation and characterization.

**Reliable Sealing & Easy Operation:** Screw-based assembly and chemical-resistant O-ring sealing provide excellent airtightness before cycling experiments, ensuring safe operation both inside a glovebox and under ambient conditions.

**Convenient Maintenance & Sample Integrity:** Rapid assembly/disassembly allows safe post-testing cell opening, preserves sample integrity, and simplifies cleaning between experiments.

### Specifications

Maximum pressure tolerance: 6 MPa

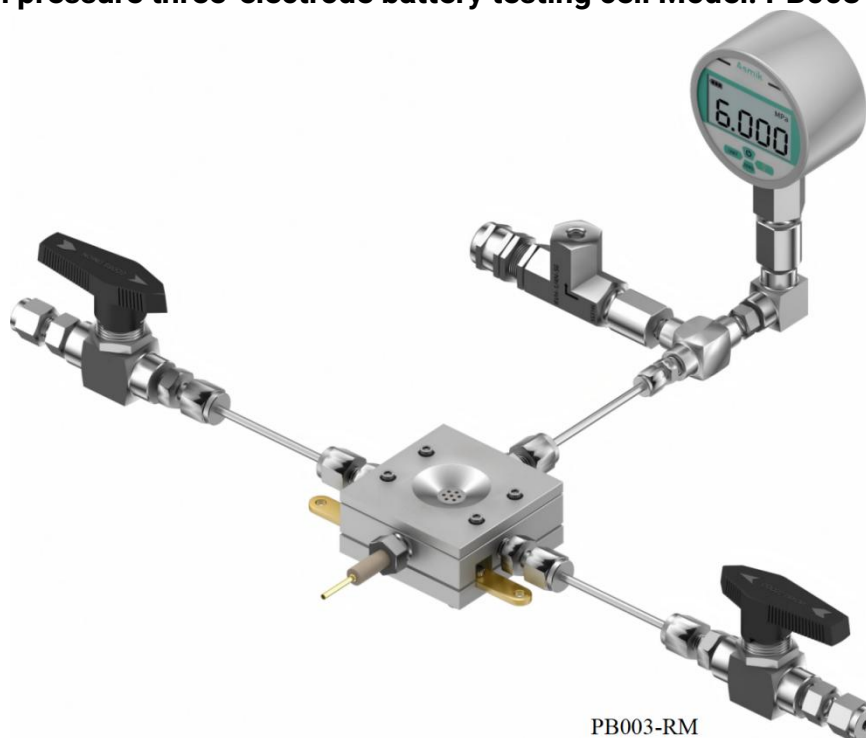
Distance from working electrode to optical window: < 2 mm

Optical window diameter: 8 mm

Overall dimensions: 50 × 50 × 24 mm

## Li-ion In-situ Equipment Series

In-situ Raman pressure three-electrode battery testing cell Model: PB003-RM



### Description

Extended from the B002-RM platform and integrated with a pressure system capable of withstanding up to 6 MPa, this in-situ Raman electrochemical cell is engineered for real-time spectroscopy and morphology evaluation of electrode materials during electrochemical testing.

### Key Functional Features

**High-Purity Titanium Construction:** Manufactured from high-purity titanium for excellent corrosion resistance, mechanical durability, and stable long-term performance.

**Dual Electrode Configuration:** Supports positive and negative electrode connections, with membrane isolation (membrane supplied by user) to enable precise half-cell operation.

**Adjustable Loading Mechanism:** Spring-based contact pressure adjustment ensures reproducible load conditions and reliable performance during charge/discharge testing.

**High Sealing Integrity & Easy Operation:** Screw-fastening assembly combined with chemical-resistant O-ring sealing delivers strong airtightness and convenient setup for both glovebox assembly and ambient testing environments.

**Efficient Sample Handling & Cleaning:** Rapid disassembly after testing allows secure sample retrieval without damage, while streamlined assembly/disassembly supports efficient cleaning and experiment turnover.

### Specifications

Maximum pressure: 6 MPa

Distance from working electrode to optical window: < 2 mm

Optical window diameter: 8 mm

Overall dimensions: 50 × 50 × 24 mm

## Li-ion In-situ Equipment Series

### In-situ infrared Li-ion testing cell Model: B-IFA

Experience innovation with our cutting-edge electrochemical cell featuring advanced materials and precise engineering:

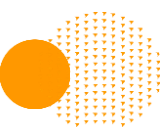
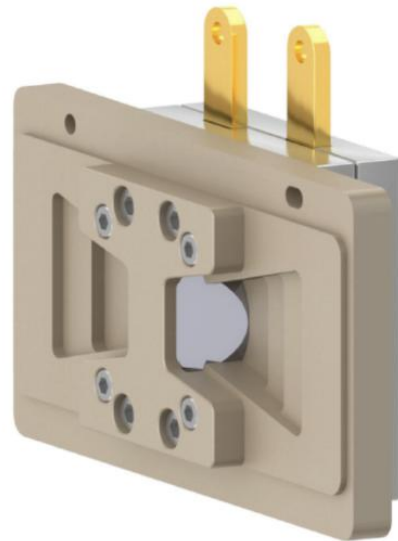
**Infrared Window Material:** Crafted from single crystal silicon, our electrochemical cell has superior infrared window ensures exceptional performance and sensitivity in your experiments.

**Cell Body Material:** Constructed from high-purity titanium, the robust cell body provides durability and stability, meeting the demands of rigorous electrochemical studies.

**Cell Dimensions:** Compact and efficient, the cell measures 50x50x20mm, optimizing space while delivering outstanding functionality.

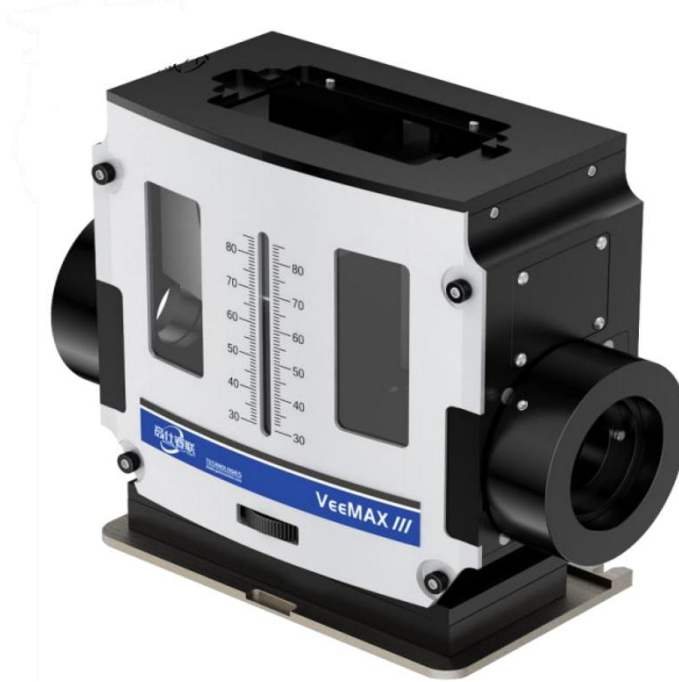
**Crystal Technology:** Utilizing silicon (Si) as the crystal material sets our electrochemical cell apart. In conventional infrared window materials like Ge, ZnSe, and Si, our choice of Si eliminates issues associated with Ge's reactivity, ensuring optimal electrochemical responses. This decision is especially critical for applications where other materials like Ge and ZnSe may exhibit instability in acidic or alkaline solutions, making them unsuitable for use as window materials in electrochemical ATR-SEIRAS.

**Innovative Load Adjustment:** Our electrochemical cell employs a spring mechanism to dynamically change the load, ensuring a close contact between the test cell's positive and negative electrode samples and the membrane. The dual O-ring sealing design guarantees a secure and airtight cell body.



## Li-ion In-situ Equipment Series

Optical table with adjustable incident angle Model: B-IFA-OT



**Continuous and Variable Incidence Angle:** Enjoy the flexibility of continuously adjustable incidence angles, paired with a variety of crystal plates for selective depth control.

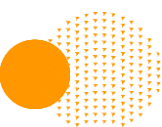
**High Throughput:** Achieve remarkable throughput with over 50% transmission efficiency for 45-degree ZnSe crystals. Maximize your efficiency by minimizing sampling time and detecting components in low-concentration complex samples.

**Continuous and Adjustable Angles:** Tailor your experiments with continuously adjustable angles ranging from -30 to 80 degrees, providing the versatility needed for a wide range of analytical applications.

**Optimal Depth Penetration:** Explore the ideal balance between 0.4 to 46 micrometers of penetration depth, offering a diverse range of choices for in-depth analysis studies.

Product Name	Model
In situ infrared Li-ion testing cell	B-IFA
Optical table with adjustable incident angle	B-IFA-OT

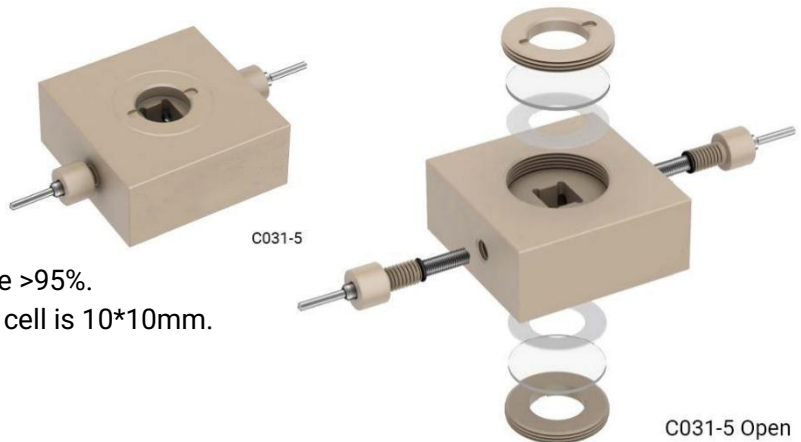
Support the modification of existing optical paths to enable magnetic stirring and enhance infrared signals.



## Li-ion In-situ Equipment Series

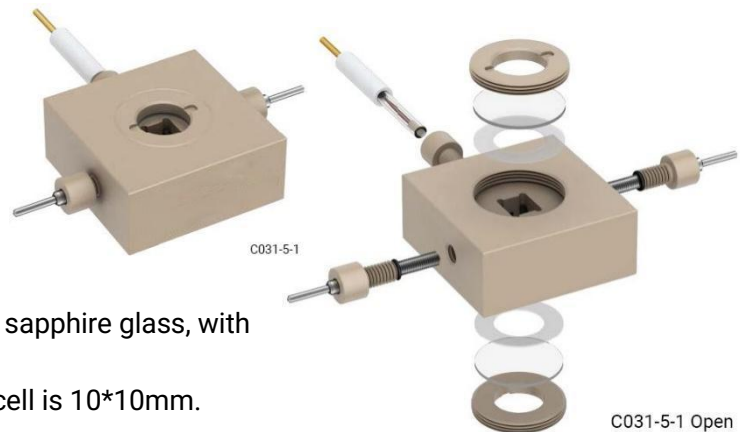
### In-situ battery simulation observation cell (Li dendrite) Model: C031-5

- The conductive substrate of cell is made of high-purity titanium.
- The cell can simulate Li-ion battery and observe the growth of Li dendrites with the cross-sectional configuration
- The optical window of cell is made of sapphire glass, with a transmittance >95%.
- The electrode sheet size suitable for cell is 10\*10mm.

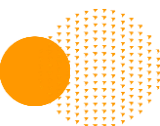


### In-situ battery simulation observation cell (Li dendrite) Model: C031-5-1

- The cell has been modified based on C031-5 by adding a reference electrode.
- The conductive substrate of cell is made of high-purity titanium.
- The cell can simulate Li-ion battery and observe the growth of Li dendrites.
- The optical window of cell is made of sapphire glass, with a transmittance >95%.
- The electrode sheet size suitable for cell is 10\*10mm.

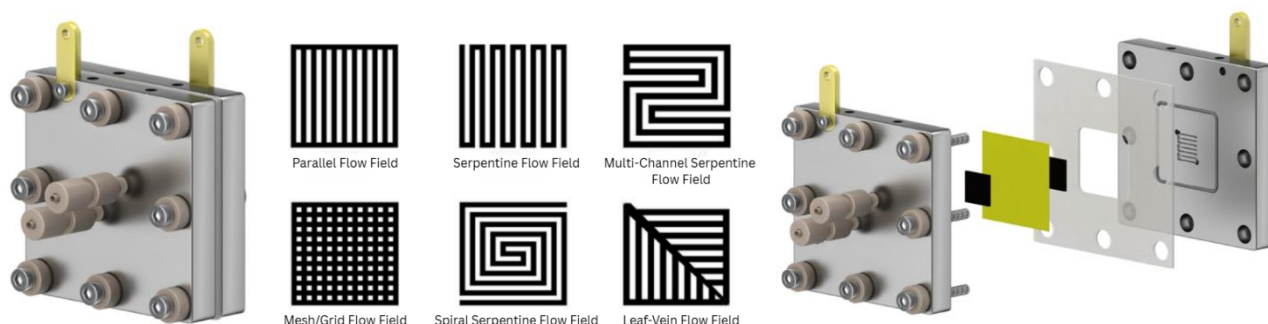


### In-situ observation chamber for powder samples Model: C031-6



## MEA Membrane Electrode Assembly Electrolytic Cell Series

Metal bipolar plate membrane electrode electrolytic cell Model: MEA-TI-TI



Unleash the power of advanced electrochemical research with our bipolar membrane electrode electrolyzer, designed for high-performance studies in CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolysis, and a wide range of electrocatalytic and electrochemical processes. Engineered for versatility, it excels in applications such as fuel cell development, synthetic electrochemistry, and electrochemical wastewater treatment, empowering researchers to push the boundaries of efficiency, precision, and innovation in modern electrochemical science.

**Versatile Application:** Primarily designed for in-depth research testing in electrochemical CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolytic, and other electrochemical processes.

**Exceptional Sealing:** The cell body is equipped with dual O-ring sealed slots, ensuring superior sealing effectiveness for secure and precise experimental conditions.

**Dual Electrode Plates with Temperature Control:** The dual electrode plates are equipped with heating and temperature measurement ports, facilitating easy control of temperature conditions during electrochemical testing.

**High-Purity Titanium Construction:** The entire cell body is constructed from high-purity titanium, providing robustness and corrosion resistance. Additionally, high-purity nickel plates are available for specialized electrochemical testing in unique environments.

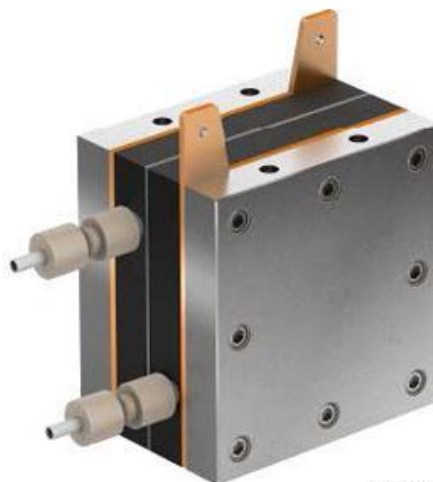
**Customizable Reactor Channels:** The reactor features various channel designs such as serpentine, parallel, and vein patterns. We also offer customization options for other channel types, including spiral, mesh, comb-like, and more.

Product Name	Model	Specifications
Ti bipolar plate	MEA-TI-TI	10*10mm ; 20*20mm ; 5cm <sup>2</sup>
		30*30mm ; 50*50mm

## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Graphite Bipolar Membrane Electrolytic Cell - Model: MEA-GP

Introducing our cutting-edge Graphite Bipolar Membrane Electrolytic Cell, Model MEA-GP, meticulously engineered for advanced research in electrochemical CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolytic, and diverse electrochemical processes.



MEA-GP

#### Key Features:

**Premium Construction:** The cell's flow channel plates feature high-quality isostatic graphite, sourced internationally for superior performance. The outermost fixed plate is crafted from titanium, incorporating heating and temperature measurement ports at the top, facilitating precise temperature control during electrochemical testing.

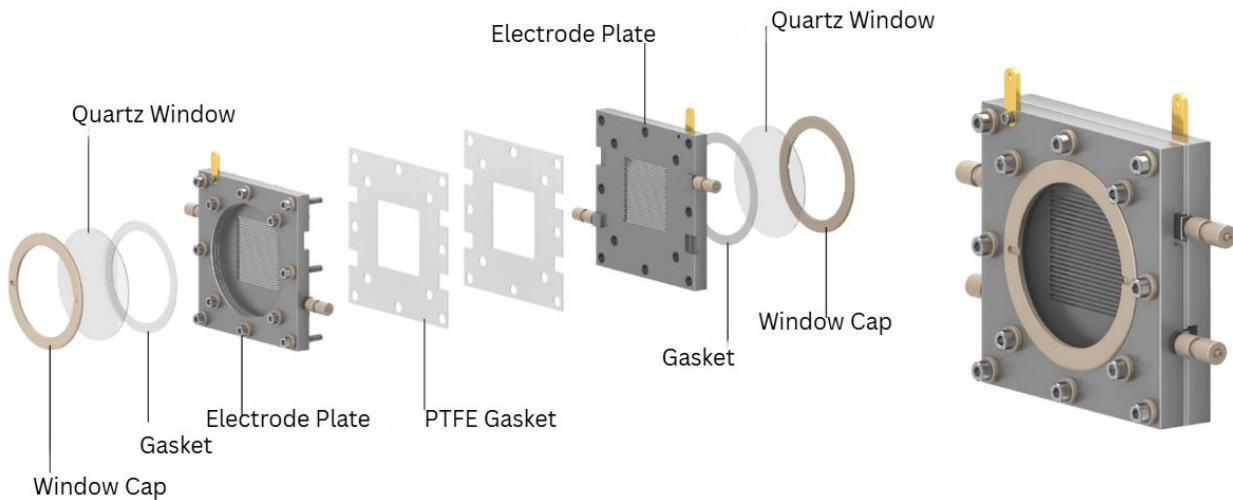
**Versatile Reaction Channels:** The reactor is designed with a variety of channel configurations, including serpentine, parallel, and vein patterns. Our design flexibility extends to customizing other channel types such as spiral, mesh, comb-like, and more, offering tailored solutions to meet your specific research requirements.

Elevate your electrochemical research with the MEA-GP Graphite Bipolar Membrane Electrolytic Cell. Experience the pinnacle of technology, featuring premium materials, precise temperature control, and customizable reactor designs, empowering you to conduct groundbreaking studies in the realm of electrochemical processes.

Product Name	Model	Specifications
Graphite bipolar plate	MEA-GP	10*10mm ; 20*20mm ; 5cm <sup>2</sup>
		30*30mm ; 50*50mm

## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Visualized Membrane Electrolytic Cell Model: MEA-Visual-A



#### Description

This visualization membrane electrode electrochemical cell is designed for research testing of electrochemical CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolysis, and other electrochemical reaction studies requiring in-situ observation.

#### Product Features

Both anode and cathode are equipped with optical visualization windows for real-time in-situ observation and high-speed imaging

Bipolar plates and protective plates are made of high-purity titanium for high corrosion resistance and long-term stability

Cathode side adopts serpentine hollow flow channel design; anode side adopts multi-parallel hollow flow channel design for efficient gas/liquid distribution

Customization available based on application requirements

#### Specifications

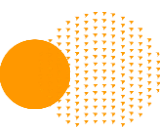
Suitable process types: CO<sub>2</sub>RR, AEM water electrolysis & membrane-based electrochemical studies

Cell structure: visual window integrated on both electrode sides

Material: high-purity titanium bipolar plate

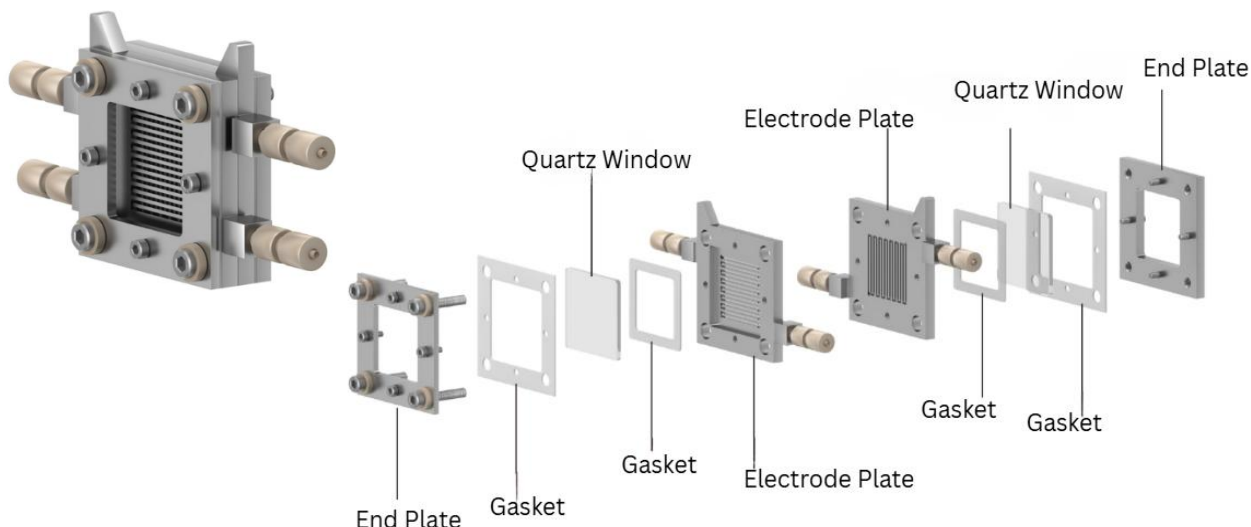
Flow field design: serpentine flow field (cathode) / parallel flow field (anode)

Custom sizing & configuration available upon request



## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Visualized Membrane Electrolytic Cell Model: MEA-Visual-B



It is built for advanced research in electrochemical CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolytic, and diverse electrochemical processes.

#### Key Features:

**Optical Visualization Windows:** Both the anode and cathode are equipped with optical visualization windows, enabling in-situ observation and high-speed photography during experiments.

**Premium Material Construction:** The dual electrode plates and fastening guard plates are constructed from high-purity titanium, ensuring durability and corrosion resistance for prolonged use in challenging experimental conditions.

**Engineered Flow Channels:** The cathode features a hollow serpentine flow channel, while the anode incorporates hollow multiple parallel flow channels, optimizing fluid dynamics for efficient electrochemical processes.

**Customizable Design Parameters:** Tailor the cell to your specific research needs by customizing flow channel types, effective active surface area, dual electrode plate thickness, and flow channel width, providing flexibility to match your experimental requirements precisely.

Experience the forefront of electrochemical research with the MEA-Visual Visualized Membrane Electrolytic Cell. Harness the power of optical visualization for real-time insights, coupled with premium materials and customizable design features, empowering you to conduct groundbreaking studies in electrochemical processes.

Product Name	Model	Specifications
Visual	MEA-Visual	10*10mm ; 20*20mm ; 5cm <sup>2</sup>
		30*30mm ; 50*50mm

## MEA Membrane Electrode Assembly Electrolytic Cell Series

Replaceable channel MEA PTFE cell Model: MEA-replaceable channel



MEA-Exchangeable Channel

MEA-Exchangeable Channel Open

It is built for advanced research in electrochemical CO<sub>2</sub> reduction, alkaline anion exchange membrane water electrolytic, and diverse electrochemical processes.

### Key Features

**Chemical Resistant and Durable:** Both the anode and cathode bipolar plates are made of high-purity polytetrafluoroethylene (PTFE), imported for superior corrosion resistance. The fastening protective plate is constructed from high-purity titanium, ensuring robust durability.

**Engineered Flow Channels:** The electrolytic cell flow channels are crafted from PTFE material, commonly adopting a serpentine channel design. The thinnest channel thickness can reach 0.1mm, and various channel thicknesses can be easily replaced according to experimental requirements.

Experience cutting-edge materials and precision engineering in our electrolytic cell, tailored for advanced studies in electrochemistry. Unleash the power of imported high-purity PTFE and titanium for unparalleled corrosion resistance and durability, while customizable flow channels provide versatility to meet diverse experimental demands. Elevate your research with our state-of-the-art electrolytic cell, meticulously designed for the forefront of scientific exploration.

Product Name	Model	Specifications
Replaceable channel	MEA-replaceable channel	10*10mm ; 20*20mm ; 5cm <sup>2</sup>
		30*30mm ; 50*50mm

## MEA Membrane Electrode Assembly Electrolytic Cell Series

Membrane electrolytic cell stack electrochemical cell Model: MEA-TI-X



### Description

Empower your electrochemical research with the MEA-Ti-X Membrane Stack Cell, designed for high-performance studies in CO<sub>2</sub> reduction, water electrolysis, and organic electrochemical synthesis. This advanced system features a stacked single-plate architecture, separating the anode and cathode through independent flow-field plates to achieve higher voltage, greater power density, and improved experimental efficiency. Constructed from high-purity titanium for superior durability and corrosion resistance, optional nickel plates are also available for testing under specialized electrochemical environments.

### Product Features

**Stacked Design:** Independent flow-field plates for anode and cathode deliver higher voltage and power output.

**Material Options:** Standard body in high-purity titanium; optional high-purity nickel plates for specialized environments.

**Versatile Flow Fields:** Supports serpentine, parallel, and leaf-vein patterns, with customization for spiral, grid, or interlaced channels.

**Thermal Control Ready:** Equipped with heating and temperature-sensing ports for precise temperature regulation.

**Multiple Flow-Field Sizes:** 20×20 mm, 30×30 mm, 50×50 mm, and 100×100 mm – fully customizable upon request.

**Durable Components:** Nickel-plated copper current collector plates and silicone gaskets ensure excellent sealing and chemical resistance.

**Flexible Connectivity:** Supports both series and parallel flow configurations to meet diverse research requirements.

### Specifications

Application: CO<sub>2</sub> reduction, water electrolysis, organic electrochemical synthesis

Structure: Single-plate stack with independent anode/cathode flow-fields

Flow-field sizes: 20×20 mm / 30×30 mm / 50×50 mm / 100×100 mm (customizable)

Materials: High-purity titanium, optional nickel plates

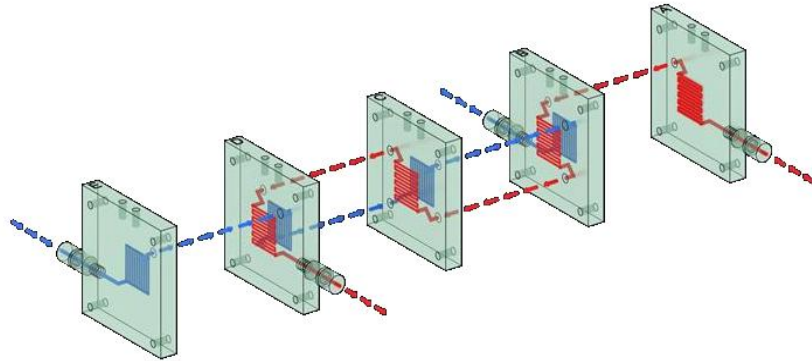
Collector material: Nickel-plated copper

Gasket material: Silicone

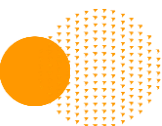
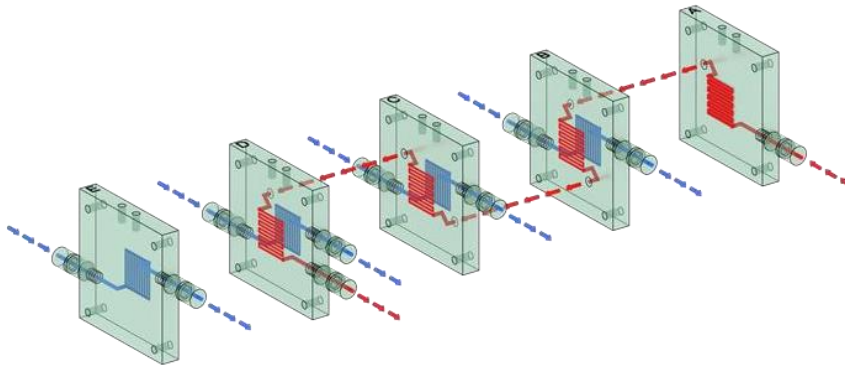
Flow-field types: Serpentine, parallel, leaf-vein (custom flow-fields available)

Temperature control: Integrated heating and temperature measurement ports

### Series channel schematic



### Series-parallel channel schematic



## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Membrane Electrode Heating Temperature Controller

Single Channel



Multi Channel



#### Description

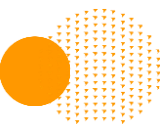
Model EC200-03 is a compact membrane electrode heating and temperature control device designed for precise temperature regulation in electrochemical membrane electrode applications. The system supports timing functions and utilizes fuzzy PID control for rapid temperature rise and accurate control.

#### Product Features

- Compact and portable design with timing capability
- Fuzzy PID temperature control provides faster heating response and higher control precision
- Industry-leading design and build quality ensures high reliability and strong anti-interference performance
- Compared with traditional PID, fuzzy PID offers smaller temperature overshoot, faster stabilization time and improved accuracy
- Auto-tuning capability enables more precise heating control

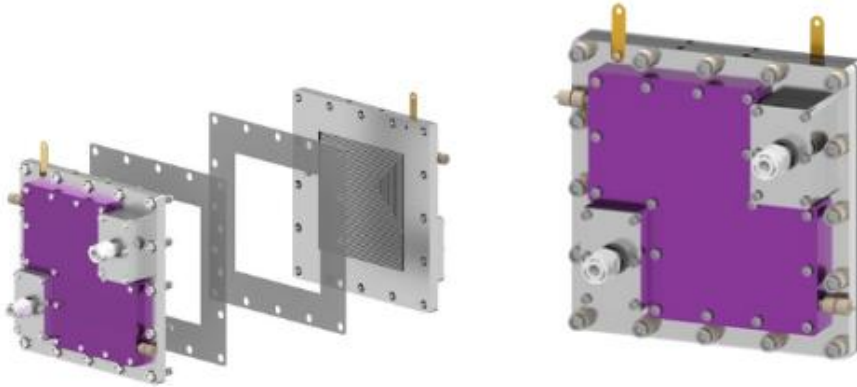
#### Specifications

- Control algorithm: Fuzzy PID
- Function: Heating + Temperature Control
- Application: Membrane electrode heating experiments / membrane electrode testing environments
- System capability: Timing-enabled, high precision temp regulation
- Device type: Compact benchtop controller



## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Membrane Electrode Electrolyzer with Constant-Temperature Water Zone



#### Description

This membrane electrode electrolyzer features a 100 × 100 mm flow field and integrates a constant-temperature water zone for precise thermal management. Designed for research and pilot-scale electrolysis applications, it is suitable for CO<sub>2</sub> reduction, alkaline AEM water electrolysis, fuel cell flow field studies, and electrochemical mechanism research requiring stable temperature control.

#### Product Features

100 × 100 mm Standard Flow Channel: Large test area optimized for fundamental study and pilot demonstration.

Integrated Constant-Temperature Water Zone: Purple interlayer enables both heating and water cooling; controlled via heating rods + thermocouples for dual-mode temperature precision.

High-Purity Titanium Construction: Anode and cathode endplates manufactured from high-purity titanium for superior chemical stability and corrosion resistance.

Optimized Serpentine Multi-Loop Flow Channels: Multi-path serpentine return flow enhances mass transfer and improves reaction uniformity.

Shear-Force Enhanced Flow Field: Proprietary serpentine cutting-flow geometry reduces flow resistance when paired with high-pressure pump operation (up to approx. 1 MPa).

Replaceable Gold-Plated Copper Current Tabs: Detachable electrode tabs enable easy service, maintenance and replacement.

Customizable: Channel design, electrode interfaces, and cell configuration can be customized based on user requirements.

#### Specifications

Flow Field Size: 100 × 100 mm

Temperature Control: Heating + water cooling (integrated water zone)

Pressure Compatibility: Up to approx. 1 MPa (with suitable high-pressure pump)

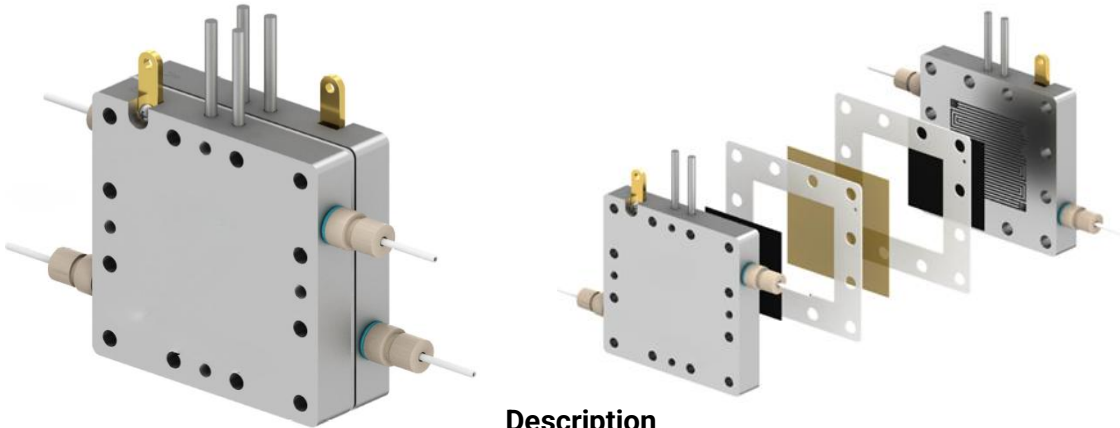
Material: High-purity titanium endplates / gold-plated replaceable current collector tabs

Flow Structure: Multi-serpentine return channel design (other flow geometries available upon request)

Suitable Applications: CO<sub>2</sub> electrolysis, AEM water electrolysis, fuel cell flow field study, lab & pilot-scale electrochemical systems

## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Membrane Electrode Electrolyzer with Constant-Temperature Water Zone (Cell Only)



#### Description

This membrane electrode electrolyzer with constant-temperature water zone features a compact 50 × 50 mm flow field, designed for controlled electrolysis testing and electrochemical studies in research environments.

#### Product Features

50 × 50 mm standard flow field for precision testing in lab-scale research

Anode and cathode endplates manufactured using high-purity titanium for superior corrosion resistance

Multi-serpentine return flow channel design enhances uniform flow distribution and reaction efficiency

Integrated shear-force optimized serpentine geometry reduces electrical resistance when combined with high-pressure pumping (~1 MPa)

Replaceable gold-plated copper current collector tabs for convenient maintenance and replacement

#### Specifications

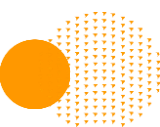
Flow field size: 50 × 50 mm

Endplate material: High-purity titanium

Flow field structure: Multi serpentine return channel

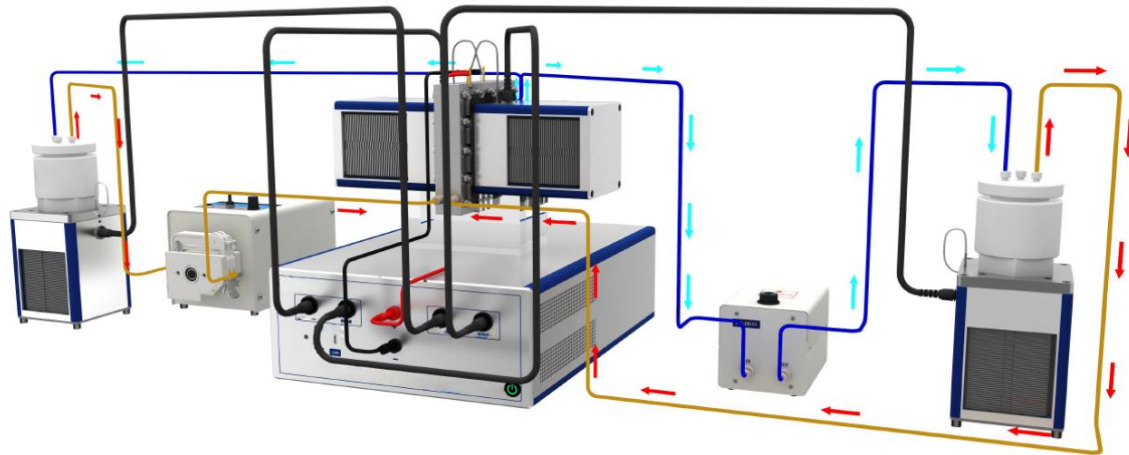
Pressure compatibility: Up to approx. 1 MPa (with suitable high-pressure pump)

Current collector: Detachable gold-plated copper tabs



## MEA Membrane Electrode Assembly Electrolytic Cell Series

### High-Current Solution System for Membrane Electrode Electrolyzer



#### Description

This system enables precise control and recording of temperature (heating & cooling), current, and voltage parameters under high-current-density and large-electrode-area CO<sub>2</sub> electrolysis conditions. It greatly improves stability and allows researchers to evaluate the influence of electrolyte temperature variation on reaction selectivity.

#### Product Features

Supports maximum output voltage of 32 V and output current up to 10 A

Measurement capability up to 20 V and 20 A with 0.01 V(A) measurement precision

Temperature control up to 100.0°C with ±0.1°C precision

Software supports monitoring, logging & plotting of up to 12 types of physical parameters

Real-time data recording and automatic saving even in sudden power interruption events (data interval as short as 0.02 s)

System supports upgrade expansion – additional external sensors can be added for tracking more process parameters such as gas flow rate, gas humidity, gas purity, etc.

#### Specifications

Max Output Voltage: 32 V

Max Output Current: 10 A

Max Measurement Voltage: 20 V

Max Measurement Current: 20 A

Temp Control Range: up to 100.0°C

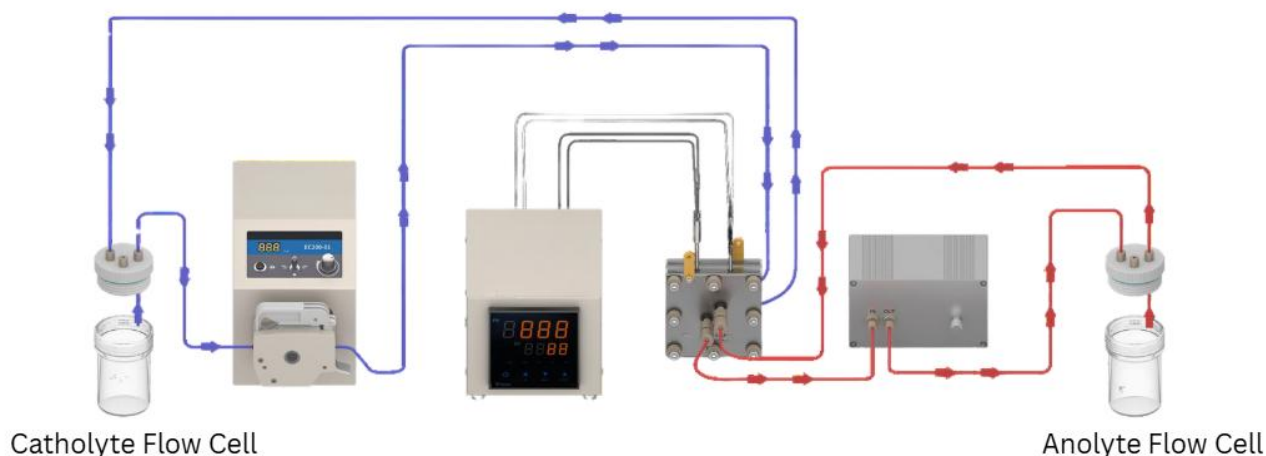
Temp Accuracy: ±0.1°C

Data Logging Interval: 0.02 s

Expandability: supports additional sensor integration (flow, humidity, purity, etc.)

## MEA Membrane Electrode Assembly Electrolytic Cell Series

### Comprehensive System for Membrane Electrode Electrolytic Cell



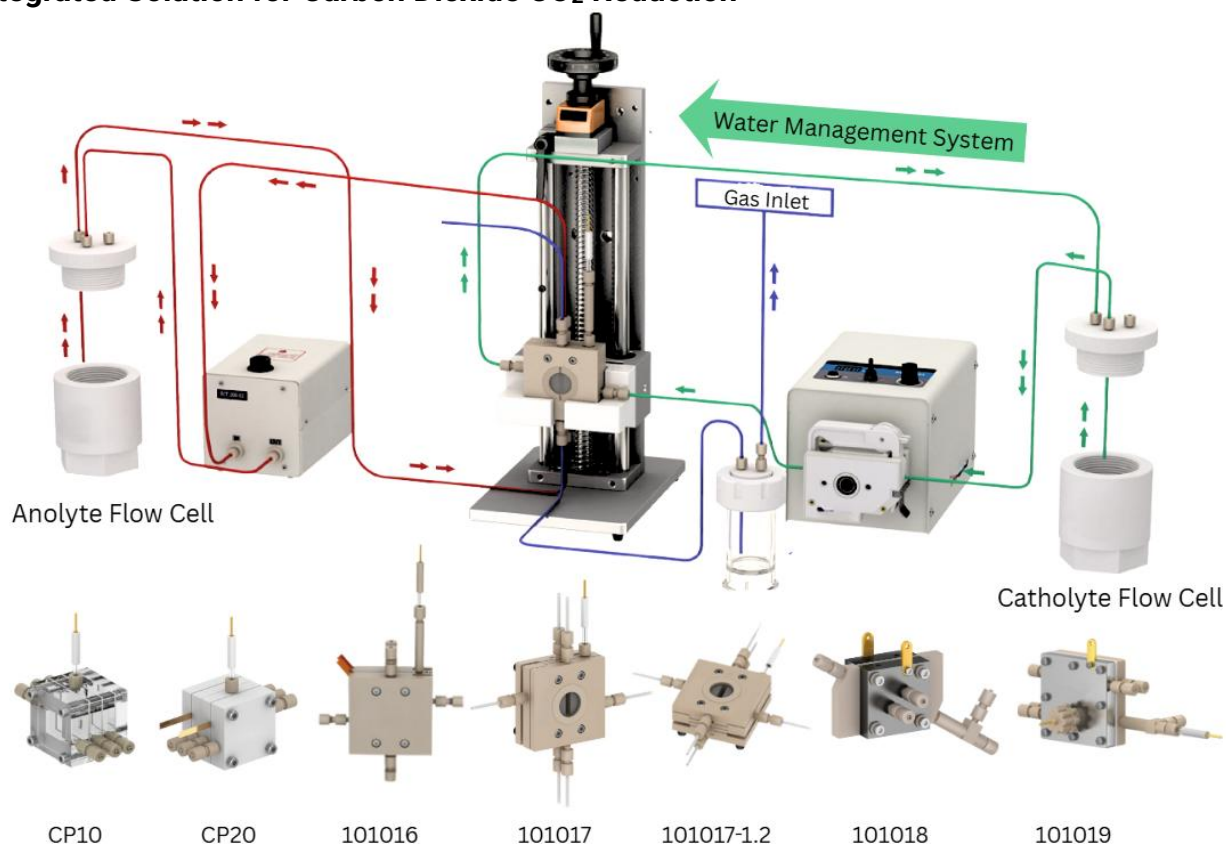
A comprehensive turnkey system developed to support flow-type membrane electrode electrolyzer setups, offering a complete and ready-to-use platform for advanced electrochemical research. The package integrates an electrochemical workstation, membrane electrode electrolyzer, peristaltic pump, gas-liquid mixing pump, humidifier, and temperature control unit, together with all essential electrochemical consumables.

Designed for seamless integration and operational efficiency, this solution enables rapid platform assembly, stable operation, and precise control across experimental conditions—ensuring reliable, high-performance results in electrochemical studies.

Product Name	Specifications	Remark
Membrane electrode electrolytic cell	Optional	Optional
Peristaltic pump	EC200-01	
Anion exchange membrane	130-100*100	Fumasep
Cation exchange membrane	115-100*100	3M
Kapton tape	8mm*30m	3M
Hydrophobic carbon paper	100*100	A box of ten sheets, 22BB
Copper tape	5mm*50m	
PTFE electrolyte reservoirs	YL-1	
PTFE tube	3mm*5m	3M
Electrolytic cell humidifier		
Buffer vial	30mL	
Mixed flow pump for gas and liquid	EC200-02	
Temperature control instrument	EC200-03	

# Gas Diffusion Electrolytic Cell Series

Integrated Solution for Carbon Dioxide CO<sub>2</sub> Reduction



## Description

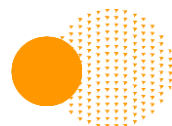
The Flow Cell Series is designed for gas-liquid separation CO<sub>2</sub> reduction experiments, offering flexible configurations and stable operation. Its modular design simplifies setup and enables various electrochemical studies with enhanced reliability and repeatability.

## Product Features

- Suitable for CO<sub>2</sub> reduction and other gas-liquid separation electrochemical experiments
- Complete solution with simplified experimental workflow and versatile adaptability
- Optimized internal design minimizes common operational issues and interference
- 3 mm PTFE tubing throughout for chemical resistance and durability
- All fittings use standard PEEK quick-connect interfaces
- Cell body materials: PEEK, PTFE, and PMMA for corrosion resistance and transparency options
- Model 101017: 3 mm cathode-anode gap
- Model 101017-1: 1 mm cathode-anode gap
- Models CP10 & CP20: 21 mm cathode-anode gap

## Specifications

- Application: Gas-liquid separation CO<sub>2</sub> reduction and general electrochemical testing
- Tubing diameter: 3 mm PTFE tubing
- Connection type: PEEK standard quick connectors
- Main materials: PEEK / PTFE / PMMA
- Electrode spacing options: 1 mm, 3 mm, 21 mm (customizable upon request)

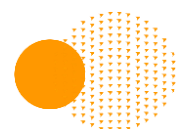


## Gas Diffusion Electrolytic Cell Series

### CO<sub>2</sub> reduction complete solution BOM

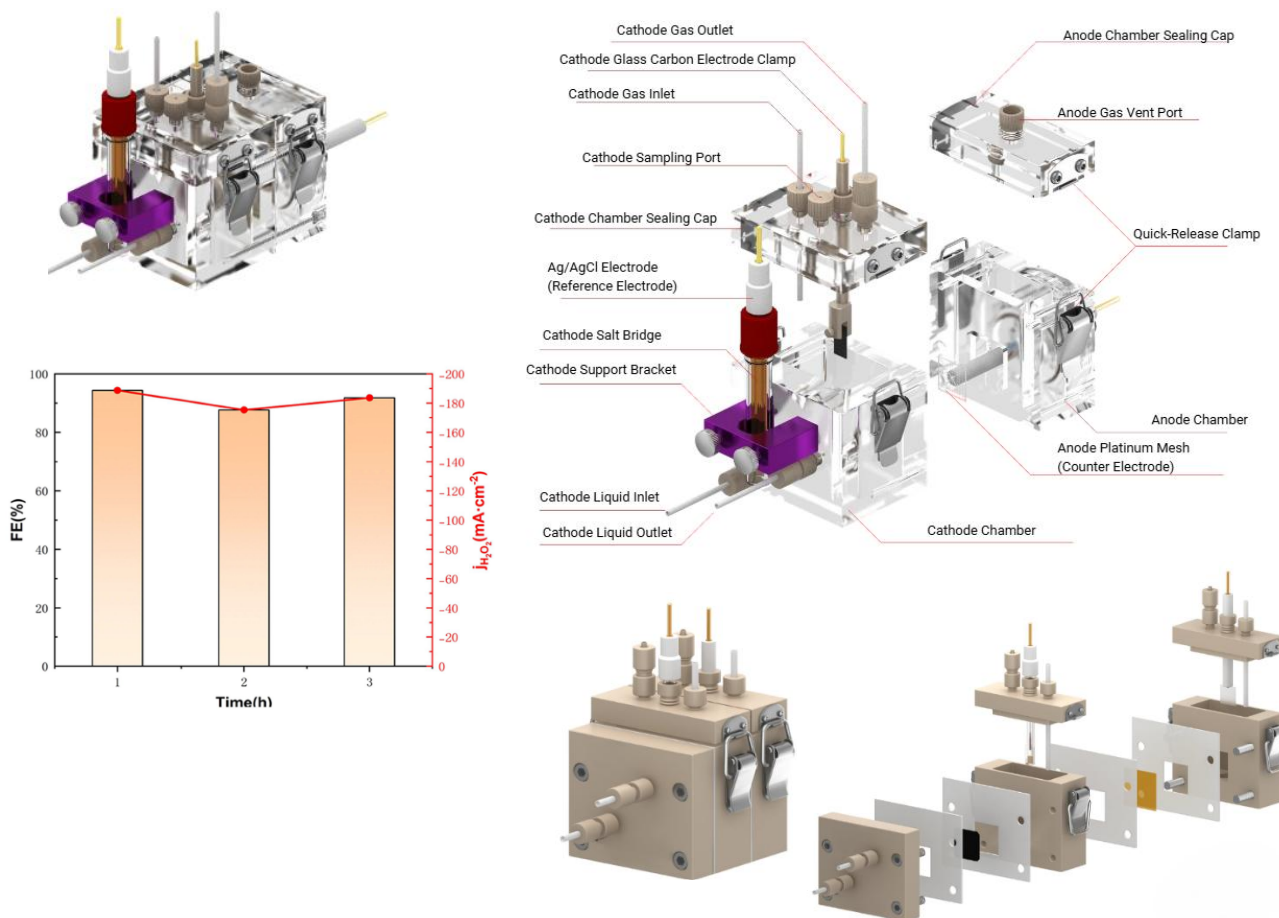
Product Name	Specifications	Remark
H-type exchange membrane electrolytic cell	CP10	Basic Series PMMA PTFE PEEK, Channel 10*10mm
H-type exchange membrane electrolytic cell	CP20	Basic Series PMMA PTFE PEEK, Channel 20*20mm
Gas diffusion electrolytic cell	101016	Intermediate Series No observation window
Observable gas diffusion electrolytic cell	101017	Intermediate Series Equipped with observation window, the distance between the anode and cathode < 7mm
Observable gas diffusion electrolytic cell	101017-1.2	Intermediate Series Equipped with observation window, the distance between the anode and cathode < 3mm
Membrane Electrode-Gas Diffusion Multi-Functional Electrolytic Cell	101018	Advanced Series
Membrane Electrode Gas Diffusion Electrolytic Cell	101019	Ultimate Series
<b>Choose ONE of the above cells</b>		
Water management system	101015	
Leakless Ag/AgCl electrode	PK-1038	
Hg/HgO electrode	Hg-1038	
Pt sheet electrode	15*35*0.2	
Peristaltic pump	EC200-01	
Anion exchange membrane	Fuma-FAA-3-50	
Cation exchange membrane	N115 100*100	
Hydrophobic carbon paper	100*100	A box of 10 sheets
Salt bridge	CP-1038	
Copper tape	5mm*50m	
PTFE electrolyte reservoirs	YL-1	
PTFE tube	3mm*5m	
Buffer vial	30ml	
Mixed flow pump for gas and liquid	EC200-02	Internal shear force
Mass Flow Meter	ACCU	

All sizes are standard sizes and various volumes can be custom-made according to requirements.



# Gas Diffusion Electrolytic Cell Series

## Entry-Level Gas Diffusion Membrane Electrochemical Cell Model: C007-11



### Description

This gas diffusion membrane electrolyzer (Flow Cell) is an entry-level model designed for beginners to explore gas diffusion electrochemical systems. It provides an easy-to-use, quick-assembly platform for fundamental CO<sub>2</sub> reduction and other gas-involved electrochemical experiments.

### Product Features

- Entry-level gas diffusion flow cell designed for basic electrochemical research and training
- Constructed entirely from PMMA or PEEK, selected for its strength and chemical resistance suitable for the required wall thickness
- Quick-open mechanism allows convenient assembly and disassembly of the cell lid
- Configured as a three-electrode system for complete electrochemical testing capability
- Both anode and cathode sides are pre-fitted with gas inlet/outlet ports and spare plugs, allowing flexible use under different experimental conditions

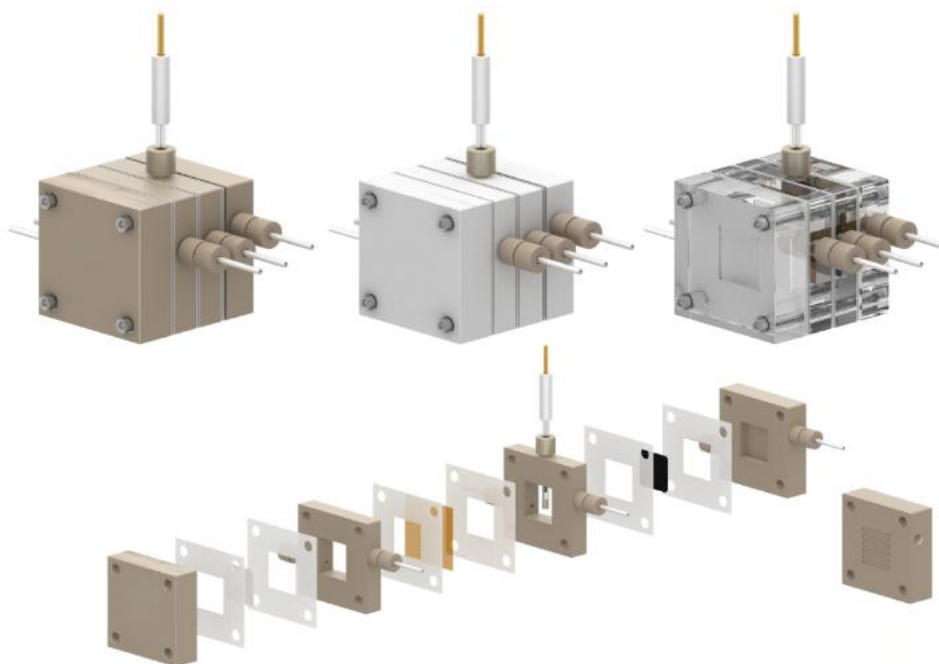
### Specifications

- Material: PEEK (high-strength, corrosion-resistant)
- Electrode configuration: Three-electrode system
- Design: Quick-open cell cover mechanism
- Gas connection: Inlet/outlet ports with spare sealing plugs
- Suitable for: Beginner CO<sub>2</sub> reduction and general gas diffusion electrochemistry



## Gas Diffusion Electrolytic Cell Series

Gas Diffusion Basic Series Electrochemical Cell Model: CP10 / CP20



### Description

The CP10/CP20 Standard Gas Diffusion Electrolyzer is an upgraded version of the entry-level model, featuring a Flow Cell configuration for improved gas–liquid flow control and performance stability. It is designed for CO<sub>2</sub> reduction and general gas diffusion electrochemical experiments requiring flexible flow geometry and material compatibility.

### Product Features

Standard version gas diffusion flow cell suitable for intermediate-level research and development

Upgraded to Flow Cell configuration (gas flows top-in bottom-out; liquid flows bottom-in top-out) for improved separation and control

Electrode spacing: 20 mm for stable gas–liquid interface and reduced backpressure

Common channel dimensions: 10×10 mm, 20×20 mm, customizable to user requirements

Constructed with PTFE, PEEK, or MMA (acrylic / PMMA) to support different chemical environments and transparency needs

### Specifications

Model: CP10 / CP20

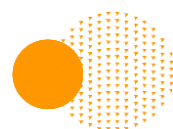
Electrode spacing: 20 mm

Channel size options: 10×10 mm / 20×20 mm / custom

Materials: PTFE, PEEK, MMA (PMMA / acrylic)

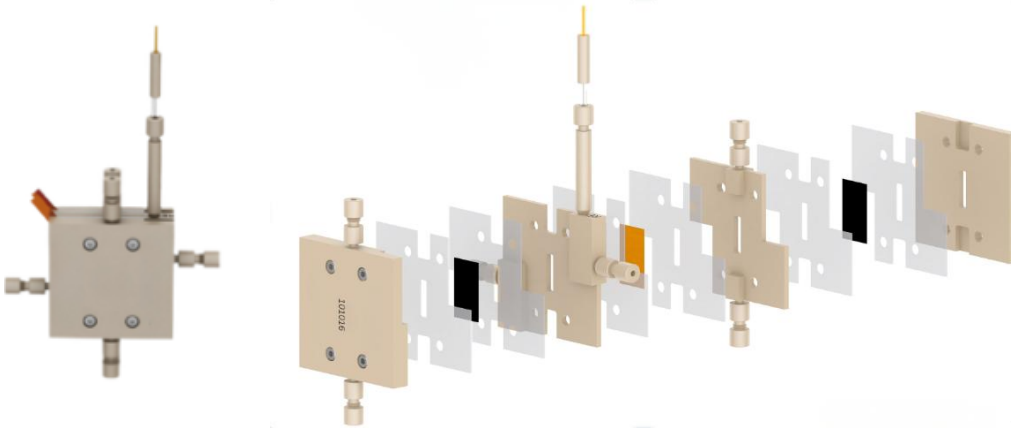
Flow configuration: gas – top in / bottom out; liquid – bottom in / top out

Application: gas diffusion electrochemistry, CO<sub>2</sub> reduction, and flow-cell-based testing

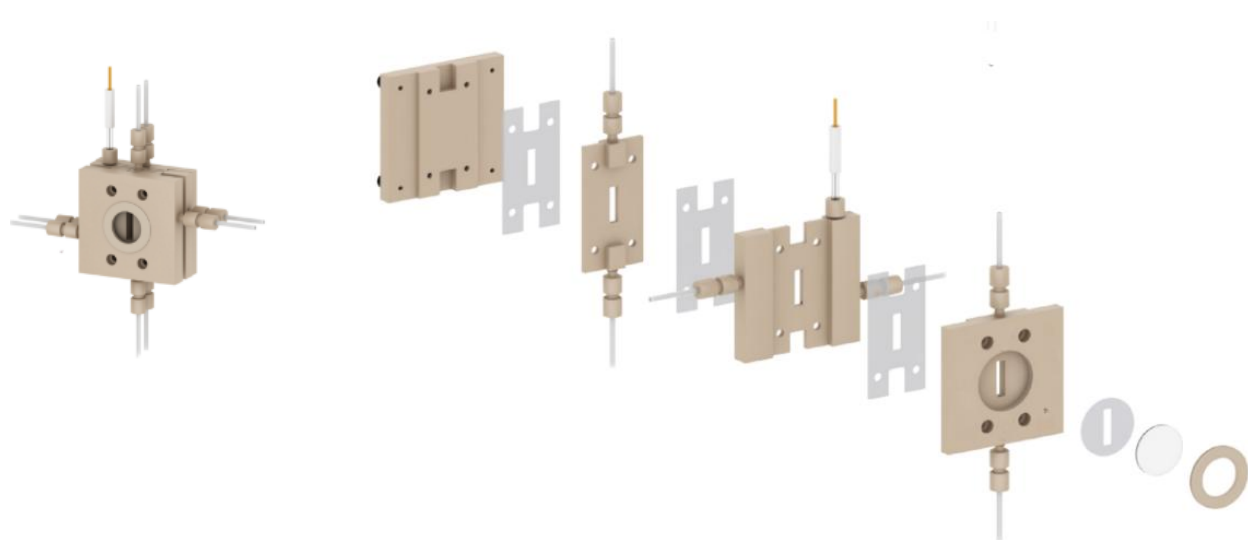


## Gas Diffusion Electrolytic Cell Series

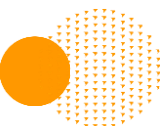
Gas Diffusion Intermediate Series Electrochemical Cell Model: 101016



Gas Diffusion Intermediate Series Electrochemical Cell Model: 101017

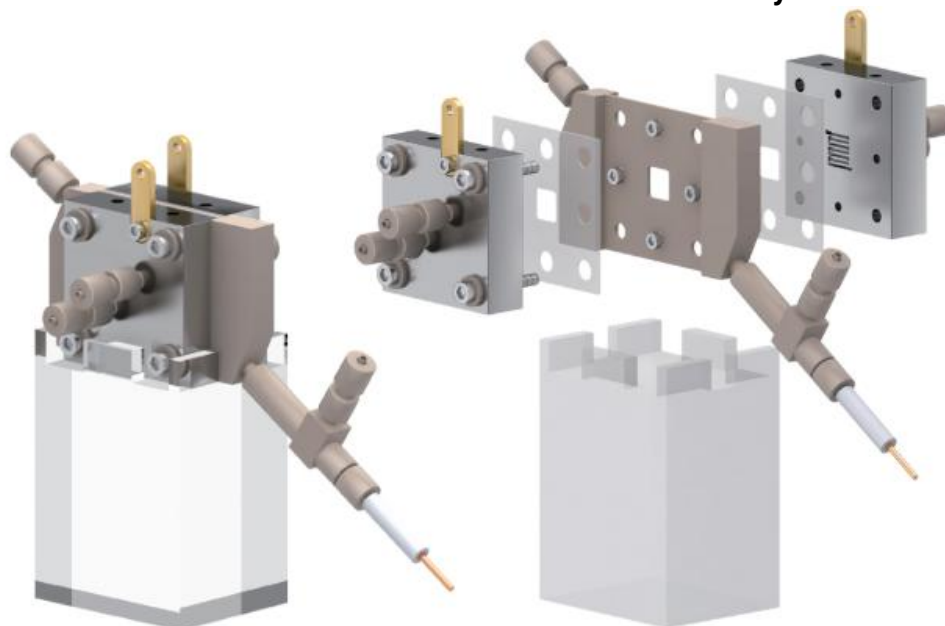


Gas Diffusion Intermediate Series Electrochemical Cell Model: 101017-1.2



# Gas Diffusion Electrolytic Cell Series

Membrane Electrode-Gas Diffusion Multi-Functional Electrolytic Cell Model: 101018

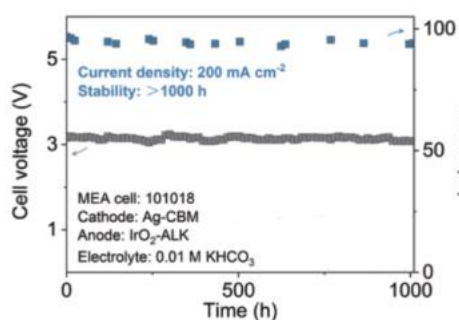


## Description

This multifunctional electrochemical cell integrates multiple operating modes for versatile research applications.

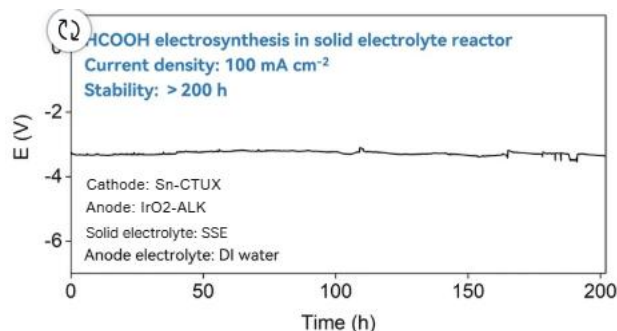
It currently supports **four major functions**:

- **Gas Diffusion (Flow Cell) Mode** – full configuration for gas-phase reactions.
- **Membrane Electrode (MEA, PEM, AEM) Mode** – compatible with different ion-exchange membranes.
- **Solid Electrolyte Mode** – suitable for solid-state electrolysis studies.
- **Battery Mode** – supports zinc–air and lithium–air battery research.



**CO<sub>2</sub>RR Test**

Over 1000 Hours of Stable CO<sub>2</sub>-to-CO Electrolysis at 200 mA·cm<sup>-2</sup> Using MEA Cell 101018



**Solid Electrolyte Test**

Stable HCOOH Electrosynthesis in Solid Electrolyte Over 200 Hours at 100 mA·cm<sup>-2</sup>

## Gas Diffusion Electrolytic Cell Series

### Membrane Electrode-Gas Diffusion Multi-Functional Electrolytic Cell

Model: 101018

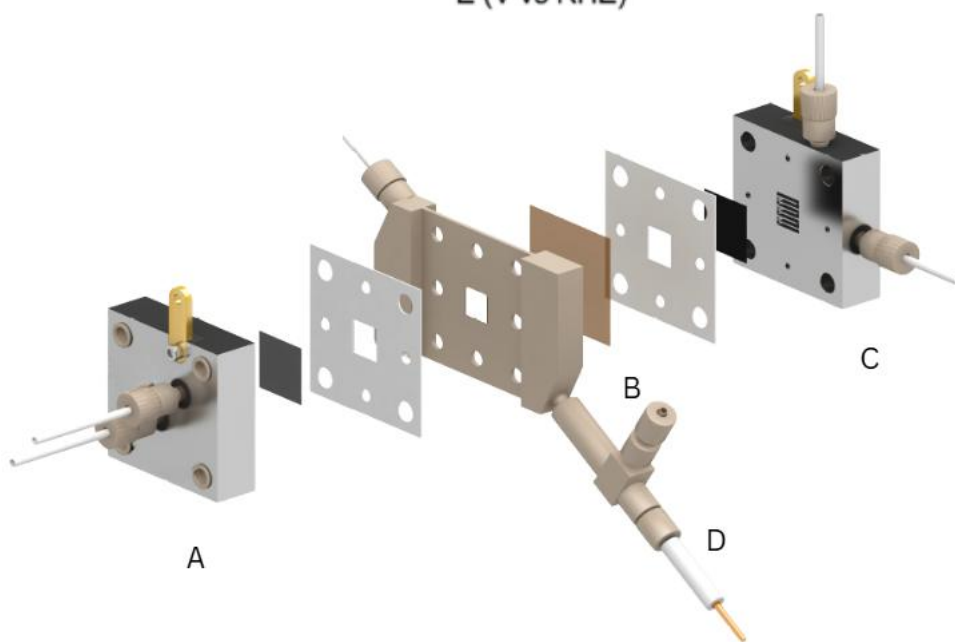
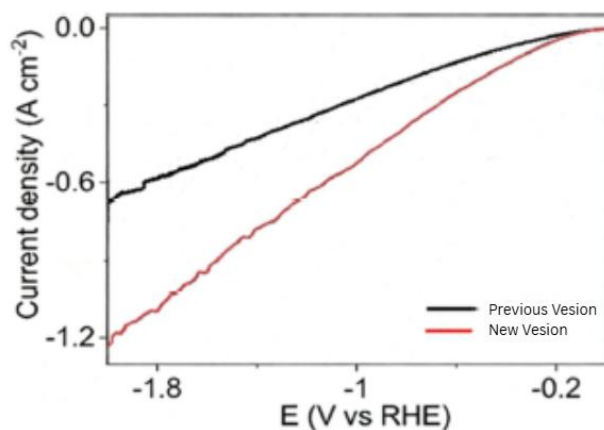
#### Function 1: (CO<sub>2</sub>) Reduction Gas Diffusion Mode

The CO<sub>2</sub> reduction gas diffusion electrolyzer operates with chamber A introducing humidified CO<sub>2</sub> gas. Between chambers A and B, a gas diffusion electrode (carbon paper) is installed, while B serves as the liquid electrolyte flow chamber for the cathode.

Between B and C, an ion-exchange membrane separates the cathode and anode. The anode can be either a metal mesh coated with a water electrolysis catalyst or a porous metal foam with water oxidation activity.

The C section circulates neutral or alkaline electrolytes for water oxidation reactions.

The D section houses the reference electrode and allows the electrolyte to flow into the cathode compartment. The reference electrode is inserted at a 45° angle, enabling efficient bubble removal and stable measurements.



## Gas Diffusion Electrolytic Cell Series

### Membrane Electrode-Gas Diffusion Multi-Functional Electrolytic Cell

Model: 101018

#### Function 2: Solid Electrolyte Mode

The three chambers A, B, and C are combined, using a solid electrolyte based on ion-exchange resin to replace the liquid electrolyte, avoiding the introduction of free ions and directly achieving the preparation of high-purity liquid products (in theory).

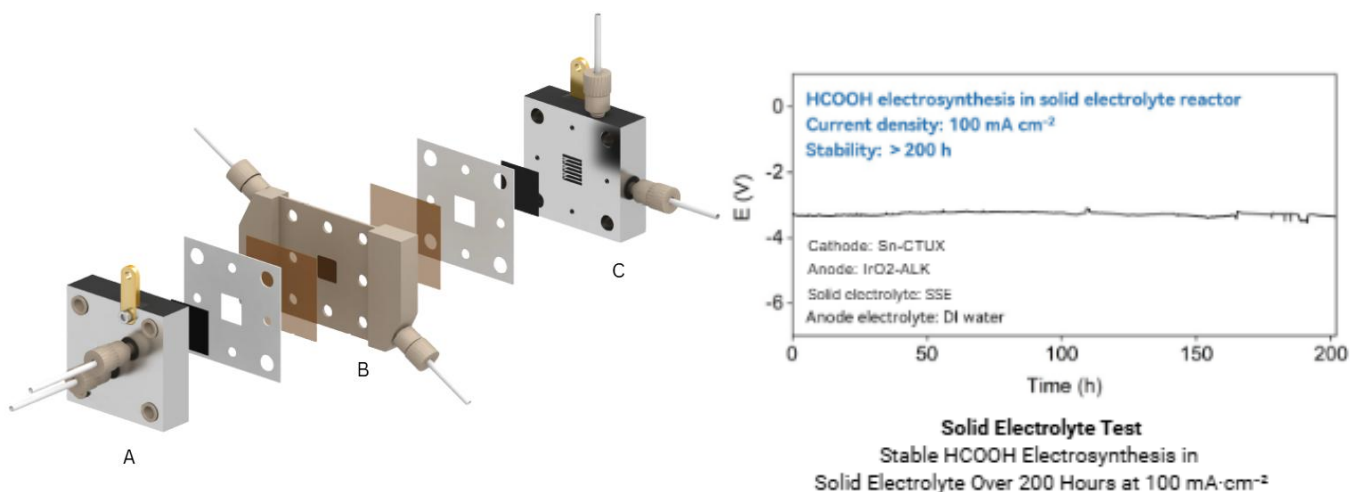
Detailed structure is as follows:

The A and C chambers feature serpentine flow channels, which extend the residence time of the gas and improve gas conversion efficiency.

The A chamber serves as the humidified CO<sub>2</sub> gas inlet chamber. Between A and B, a gas diffusion electrode (carbon paper) and an ion-exchange membrane are placed to ensure good contact, and the chamber can be cooled or heated as needed.

Between B and C, an ion-exchange membrane separates the anode and cathode. The cathode can be a metal mesh loaded with a water-splitting catalyst, or a porous metal foam with high water-splitting activity. The C chamber introduces an acidic electrolyte to carry out the oxygen evolution reaction.

The B chamber contains the solid electrolyte component. The chamber structure is cross-shaped, with a middle thickness of 1.2 mm and a central square channel of 1 × 1 cm. The channel interior is filled with ion-exchange resin, serving as a solid electrolyte to replace liquid electrolytes, allowing direct production of pure liquid fuels. Through the water inlet at the bottom of the B chamber, gaseous reactants can be introduced, achieving the preparation of high-purity liquid or aqueous products at the cathode side.



# Gas Diffusion Electrolytic Cell Series

## Membrane Electrode-Gas Diffusion Multi-Functional Electrolytic Cell

Model: 101018

### Function 3: Membrane Electrode Mode

The A and C chambers are combined, while the B and D chambers are removed, to construct a membrane electrode electrolyzer.

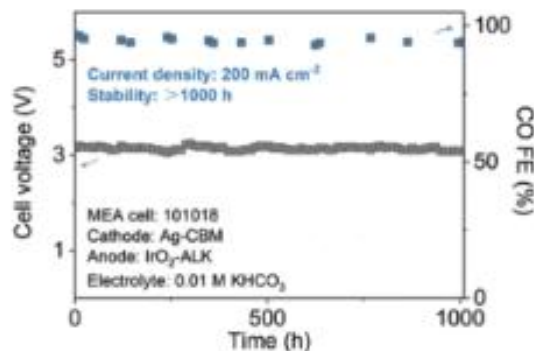
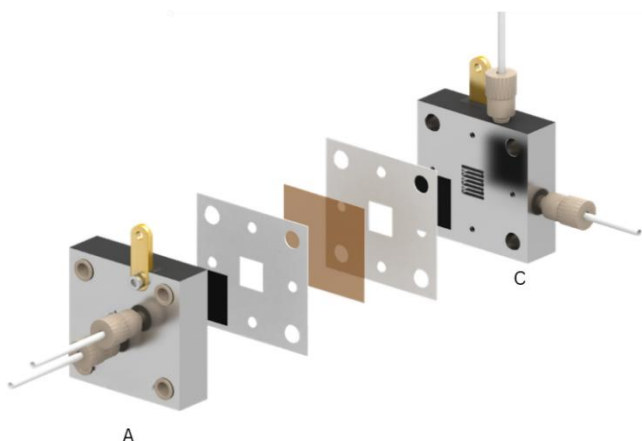
Detailed structure:

The A and C chambers feature serpentine flow channels, which extend the gas residence time and improve gas conversion efficiency.

The A chamber serves as the humidified CO<sub>2</sub> gas inlet. Between A and C, arranged in sequence (from A to C), are placed the gas diffusion electrode (carbon paper), the ion-exchange membrane or ion-exchange resin (to ensure full contact between the gas diffusion electrode and the ion-exchange membrane, cooling or heating can be applied as needed), and the metal mesh loaded with a water-splitting catalyst (which can also be a porous metal foam with high water-splitting activity).

The C chamber introduces a neutral or alkaline electrolyte for the oxygen evolution reaction. Ultra-long continuous operation stability test

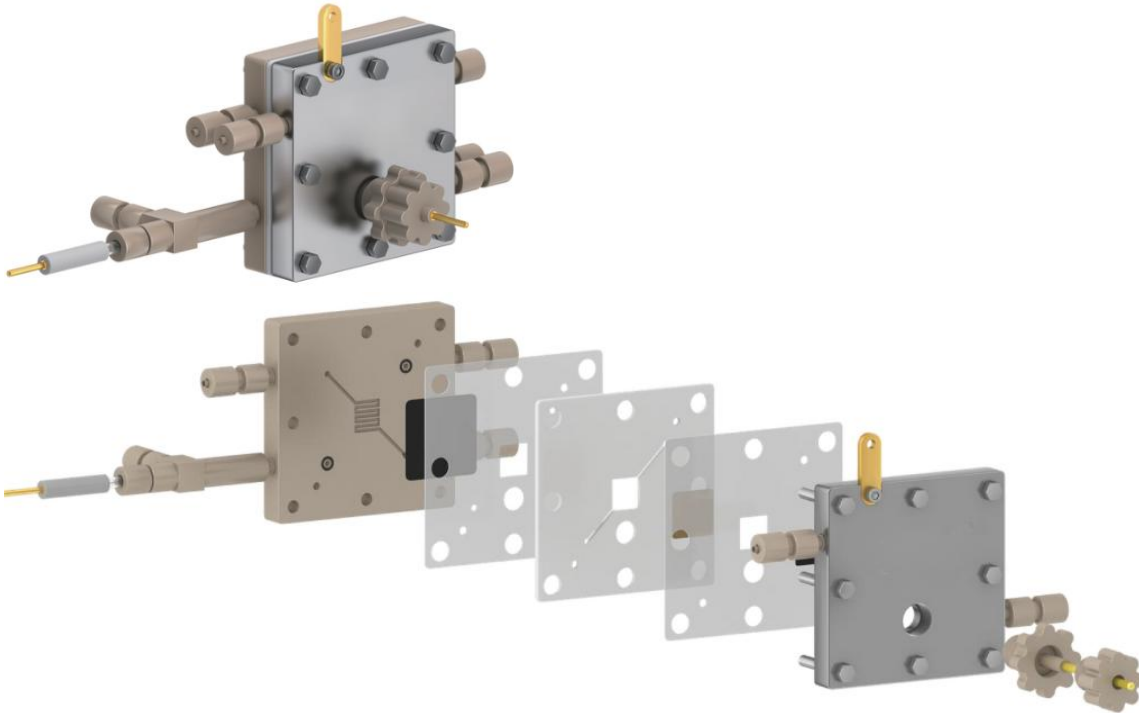
Based on the latest 101018 membrane electrode electrolyzer and the company's self-developed electrodes, continuous stable electrolysis for more than 1000 hours of CO<sub>2</sub> reduction has been achieved. Its reliability and operational stability are among the best in the world.



**CO<sub>2</sub>RR Test**  
Over 1000 Hours of Stable CO<sub>2</sub>-to-CO Electrolysis at 200 mA·cm<sup>-2</sup> Using MEA Cell 101018

## Gas Diffusion Electrolytic Cell Series

Membrane Electrode Gas Diffusion Ultimate Electrolytic Cell Model: 101019



### Description

This electrolyzer represents a new generation of gas diffusion cells, built upon the foundation of membrane electrode systems with innovative enhancements. The gas chamber adopts a standard MEA serpentine flow design, while the electrode modification increases the contact duration between the reactive gas and electrode, improving overall reaction efficiency. The redesigned cathode flow channel structure reduces the distance between the working electrode and the cathode to just 0.4 mm.

### Specifications

Electrode material: High-purity titanium

Flow channel type: Serpentine flow (default), supports custom channel designs

Working electrode to cathode spacing: 0.4 mm

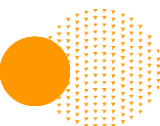
Electrode reaction area: 10×10 mm, 20×20 mm, or 30×30 mm options

### Components

Working electrode: Gas diffusion electrode (excluded)

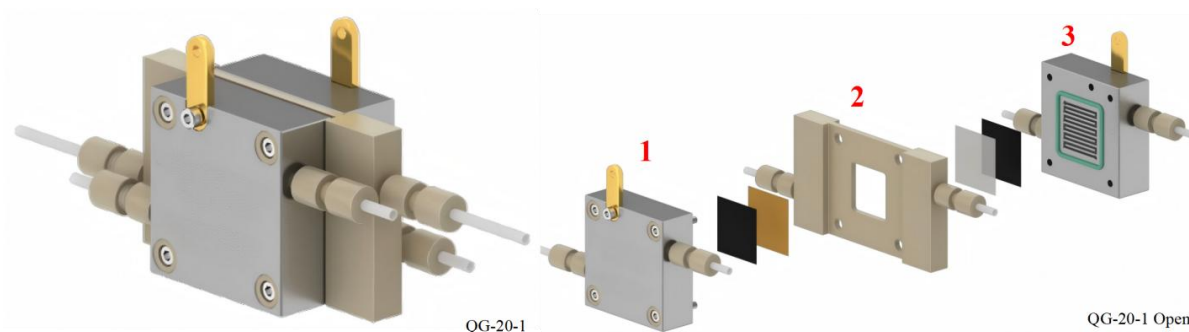
Reference electrode: Ag/AgCl electrode (standard)

Counter electrode: Porous materials such as nickel mesh (excluded)



## Gas Diffusion Electrolytic Cell Series

Solid-State Electrolyte Electrochemical Cell (Two-Electrode System) Model: QG-20-1



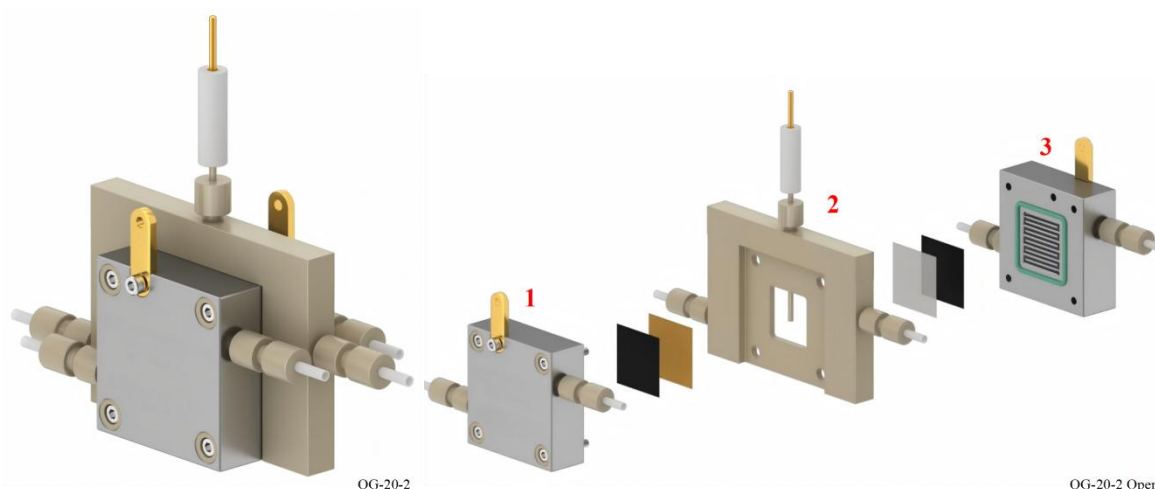
The solid-state electrolyte cell adopts a sandwich structure, establishing a gas-solid interface. It utilizes a solid electrolyte in place of liquid electrolyte, eliminating the introduction of anions/cations and directly achieving the preparation of high-purity liquid product solutions.

### Features:

- Electrode bodies 1 and 3 serve as bipolar plates with inner serpentine gas flow channels, effectively enhancing the concentration of gaseous reactants on the catalyst surface to achieve high current density.
- Between electrode bodies 1 and 2, a double-layer structure comprising an anion membrane (dioxide material) and a gas diffusion layer (loaded with anode catalyst) is employed to realize the gas-solid interface and anion transport (Note: hot pressing is required for sufficient contact). Similarly, between electrode bodies 2 and 3, a double-layer structure with a cation membrane (Nafion115) and a gas diffusion layer (loaded with cathode catalyst) is used to achieve the gas-solid interface and cation transport (Note: hot pressing is required for sufficient contact).
- Electrode body 2 is the core component of the solid-state electrolyte cell, featuring a built-in 3mm thick square (4cm<sup>2</sup>) hollow layer. This layer can be filled with molded solid electrolyte to replace the liquid electrolyte, enabling the direct preparation of liquid fuels. The solid electrolyte primarily consists of highly conductive polymer or porous ceramics. The use of pure water aims to carry away the liquid product, promoting the shift of the reaction equilibrium to the right and obtaining impurity-free product aqueous solutions.
- Substances generated in electrode body 1 and electrode body 3 pass through their respective membranes and react in intermediate electrode body 2, producing products carried away by flowing pure water.

## Gas Diffusion Electrolytic Cell Series

Solid-State Electrolyte Electrochemical Cell (Three-Electrode System) Model: QG-20-2



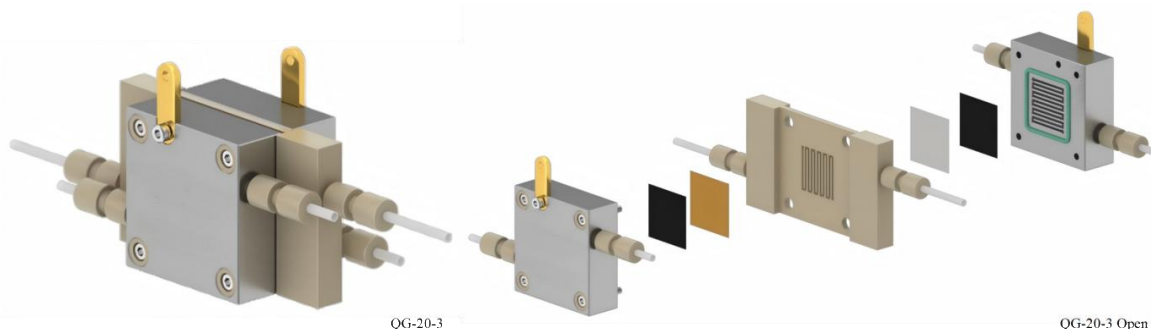
The QG-20-1 has been enhanced with the addition of a reference electrode. The reference electrode chamber has a board thickness of 3mm. The overall design of the solid-state electrolyte cell incorporates a sandwich structure, establishing a gas-solid interface. It utilizes a solid electrolyte in place of liquid electrolyte, preventing the introduction of anions/cations and facilitating the direct production of high-purity liquid solutions.

### Features:

- Bipolar Plates with Serpentine Gas Flow Channels: Electrode bodies 1 and 3 serve as bipolar plates with inner serpentine gas flow channels, effectively enhancing the concentration of gaseous reactants on the catalyst surface to achieve high current density.
- Between electrode bodies 1 and 2, a double-layer structure comprising an anion membrane (dioxide material) and a gas diffusion layer (loaded with anode catalyst) is employed to realize the gas-solid interface and anion transport (Note: hot pressing is required for sufficient contact). Similarly, between electrode bodies 2 and 3, a double-layer structure with a cation membrane (Nafion115) and a gas diffusion layer (loaded with cathode catalyst) is used to achieve the gas-solid interface and cation transport (Note: hot pressing is required for sufficient contact).
- Electrode body 2 is the core component of the solid-state electrolyte cell, featuring a built-in 3mm thick square (4cm<sup>2</sup>) hollow layer. This layer can be filled with molded solid electrolyte to replace the liquid electrolyte, enabling the direct preparation of liquid fuels. The solid electrolyte primarily consists of highly conductive polymer or porous ceramics. The use of pure water aims to carry away the liquid product, promoting the shift of the reaction equilibrium to the right and obtaining impurity-free product aqueous solutions. Substances generated in electrode body 1 and electrode body 3 pass through their respective membranes and react in intermediate electrode body 2, producing products carried away by flowing pure water.

## Gas Diffusion Electrolytic Cell Series

Solid-state electrolyte electrochemical cell (serpentine channel system) Model: QG-20-3



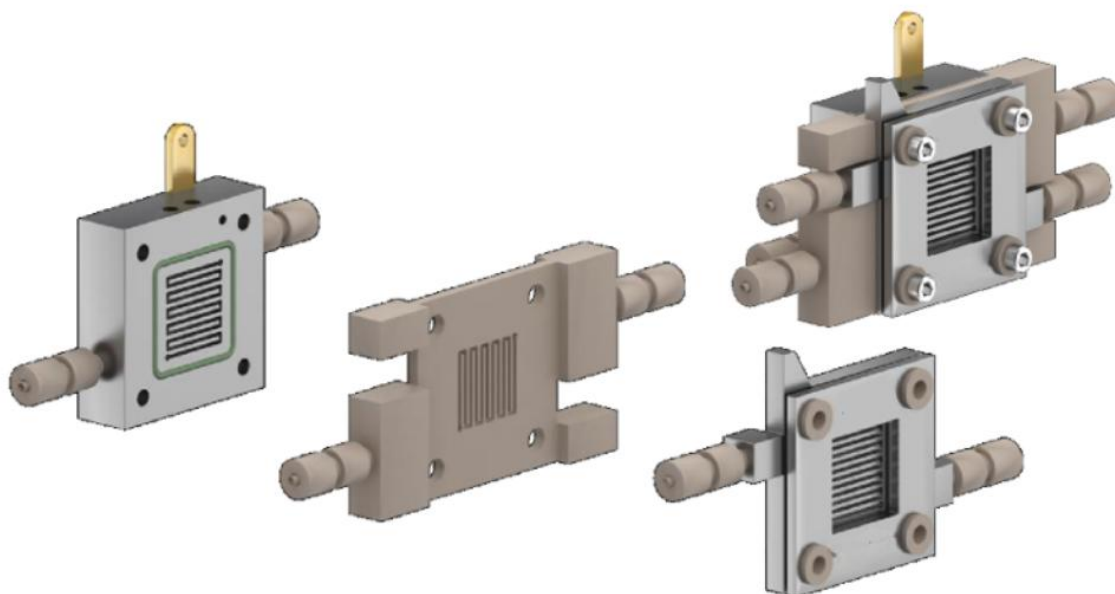
The QG-20-3 represents an advancement over the QG-20-1, specifically enhancing the design of the second electrode plate 2 by incorporating a fluid-dynamic friendly serpentine channel. The overall architecture of the solid-state electrolyte cell embraces a sandwich structure, establishing a robust gas-solid interface using solid electrolyte in lieu of liquid electrolyte. This innovative approach prevents the introduction of unwanted anions/cations, ensuring the direct production of high-purity liquid product solutions.

### Features:

- Electrode bodies 1 and 3 serve as bipolar plates, featuring inner serpentine gas flow channels. This design effectively elevates the concentration of gaseous reactants on the catalyst surfaces, achieving high current density.
- Between electrode bodies 1 and 2, a double-layer structure comprising an anion membrane (dioxide material) and a gas diffusion layer (loaded with anode catalyst) is utilized to establish the gas-solid interface and facilitate anion transport (Note: hot pressing of catalyst material is required for sufficient contact). Similarly, between electrode bodies 2 and 3, a double-layer structure with a cation membrane (Nafion115) and a gas diffusion layer (loaded with cathode catalyst) is employed to realize the gas-solid interface and promote cation transport (Note: hot pressing is required for sufficient contact).
- Electrode body 2 stands as the core component of the solid-state electrolyte cell, featuring a built-in 3mm thick square (4cm<sup>2</sup>) hollow layer. This layer can be filled with molded solid electrolyte, replacing the conventional liquid electrolyte, and enabling the direct preparation of liquid fuels. The solid electrolyte primarily consists of high-performance conductive polymers or porous ceramics. The use of pure water aims to carry away the liquid product, facilitating a shift of the reaction equilibrium to the right and obtaining impurity-free product aqueous solutions. Substances generated in electrode body 1 and electrode body 3 pass through their respective membranes and react in intermediate electrode body 2, producing products carried away by flowing pure water.

## Gas Diffusion Electrolytic Cell Series

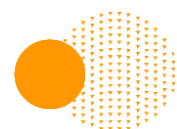
Solid-state electrolyte electrochemical cell (visualisation) Model: QG-20-4



The QG-20-3 has been upgraded with the addition of a visual high transmittance quartz window in the cathode chamber, which can be used for optical observation of the working electrodes in the cathode chamber or for additional illumination.

Model	Specifications	Remark
QG-20-1	20*20mm	includes reference electrode
QG-20-2	20*20mm	
QG-20-3	20*20mm	
QG-20-4	20*20mm	

All sizes are standard sizes and can be custom-made according to specific requirements.



## Gas Diffusion Electrolytic Cell Series

Membrane electrode - Gas diffusion dual-function electrolytic cell Model: MTR-4-1

### Features:

This electrolytic cell is specifically designed for electrochemical testing in a flowing phase, providing versatility in various experimental setups. It features a chamber-type compartment on one side and a serpentine channel on the other. The serpentine channel, commonly used for gas pathways, facilitates reactions between gases and the chamber through a gas diffusion layer.

- The dimensions of the serpentine channel are 20\*20mm, ensuring efficient gas flow and reaction within the chamber.
- The electrodes shown in the illustration are for display purposes only. The platinum mesh electrodes and reference electrodes are required to be purchased separately.

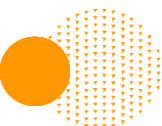
Experience the MTR-4-1, where innovation meets functionality for precise electrochemical testing in a dynamic, flowing environment. Please note that platinum mesh electrodes and reference electrodes are available for separate purchase. Elevate your experiments with this cutting-edge dual-function electrolytic cell.



MTR-4-1



MTR-4-1 Open



## Gas Diffusion Electrolytic Cell Series

### Membrane electrode - Gas diffusion dual-function electrolytic cell Model: MTR-4-2

Elevating the capabilities of its predecessor, the MTR-4-2 introduces an independent chamber for a reference electrode, providing enhanced functionality for precise electrochemical testing in a flowing phase.

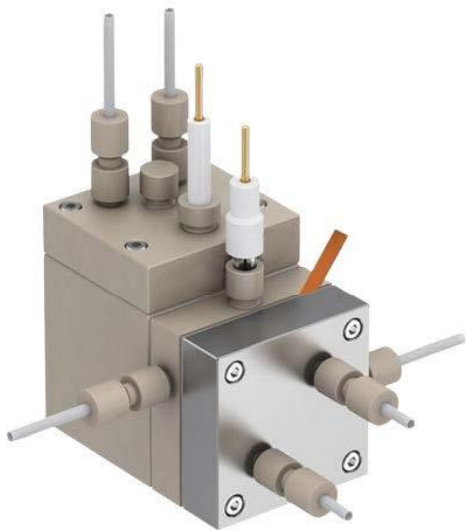
#### Features:

**Enhanced Functionality:** In comparison to the MTR-4-1 model, the MTR-4-2 incorporates a separate chamber for a reference electrode, offering expanded capabilities for electrochemical experiments.

**Versatile Application:** Tailored for electrochemical testing in a flowing phase, this electrolytic cell delivers adaptability for a variety of experimental setups.

**Dual-Chamber Design:** Featuring a chamber-type compartment and a serpentine channel, the dual-chamber design optimizes the electrolytic cell's functionality. The serpentine channel, widely employed for gas pathways, facilitates reactions between gases and the chamber through a gas diffusion layer.

Experience the next level of electrochemical testing with the MTR-4-2, where added functionalities meet versatility in a flowing phase. Please note that platinum mesh electrodes and reference electrodes can be acquired separately to complement your experiments.



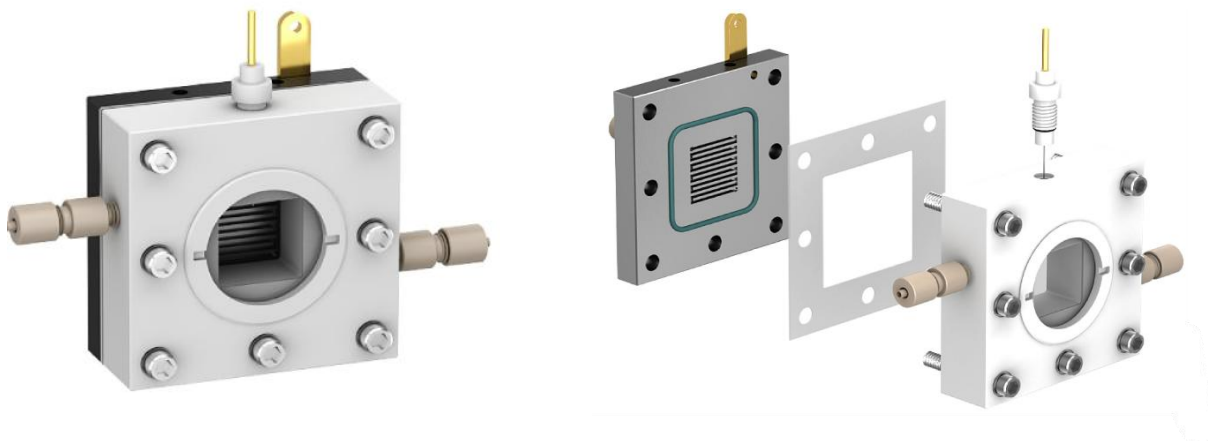
MTR-4-2



MTR-4-2 Open

## Gas Diffusion Electrolytic Cell Series

Gas Diffusion Photoelectrochemical Cell Model: MTR-QW



### Description

The MTR-QW Gas Diffusion Photoelectrochemical Cell is designed to investigate the performance of gas diffusion electrodes under photoelectron-catalytic conditions. It provides a flexible platform for studying gas–electrolyte interactions and photocatalytic efficiency in advanced electrochemical applications.

### Product Features

Realizes gas diffusion electrode functionality under photoelectron-catalytic environments.

The cathode employs gas diffusion materials such as carbon cloth, carbon paper, or porous metallic foams (e.g., nickel foam, RVC).

The anode is equipped with a platinum wire counter electrode (standard configuration).

The cathode flow channel adopts a serpentine design to enhance gas–catalyst contact and improve reaction efficiency.

Compatible with custom humidifier systems for experiments requiring humidified gas conditions.

### Specifications

Application: Photoelectro-catalysis, CO<sub>2</sub> reduction, and gas-involved electrochemical reactions

Cathode Materials: Carbon cloth, carbon paper, nickel foam, or RVC

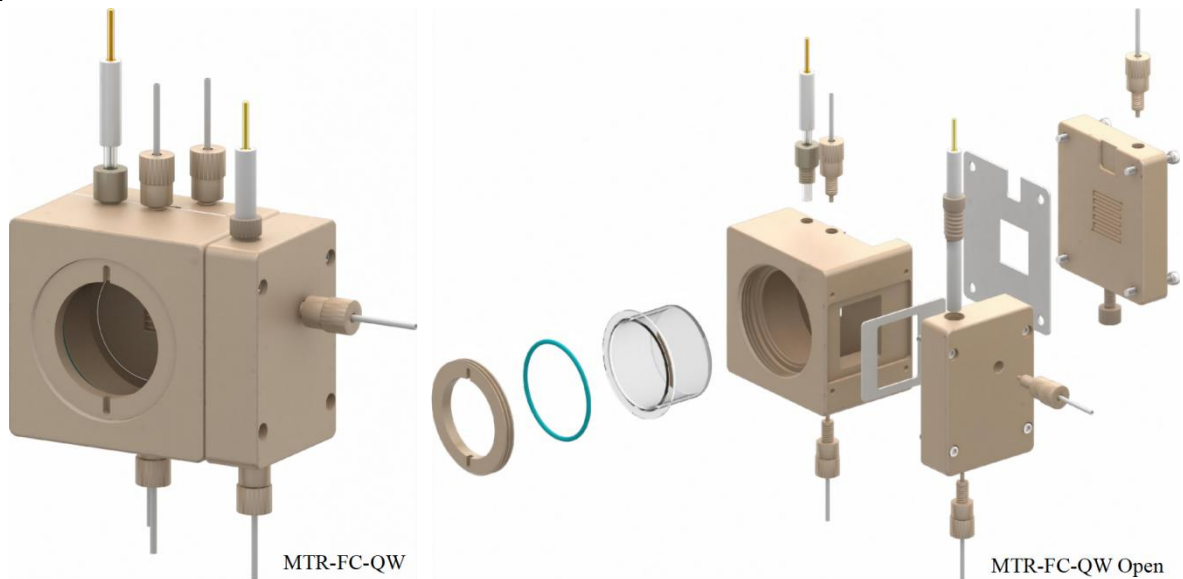
Anode Material: Platinum wire (standard)

Flow Field Type: Serpentine channel

Optional Components: Gas humidifier and auxiliary flow accessories

## Gas Diffusion Electrolytic Cell Series

Gas diffusion exchange membrane photoelectrochemical flow cell Model: MTR-FC-QW



### Features:

This electrolytic cell addresses the issue of catalyst shading from incident light in the previous Flow cell gas-diffusion electrolytic cell.

Primarily designed for testing flow systems such as photoelectrochemical CO<sub>2</sub> reduction (CO<sub>2</sub>RR) and nitrogen reduction (NRR).

### Electrode Specification:

Reference Electrode: Silver Chloride Electrode (Standard)

Counter Electrode: Graphite Rod Electrode (Standard)

Working Electrode: Gas Diffusion Electrode (Self-supplied)

This innovative solution is tailored for applications demanding precise and reliable results in light of its improved design over conventional flow cell gas-diffusion electrolytic cells.

## High-pressure Electrochemical Cell Series

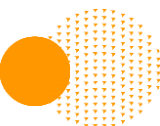
### Single chamber high-pressure electrochemical cell Model: P001-1

- Material: Ti construction.
- Max Pressure Resistance: 6Mpa.
- Volumes: Available in 50ml and 100ml, customizable as per needs.
- Valve Material: Stainless Steel 304.
- Reference Electrode: AgCl electrode
- Counter Electrode: Pt plate electrode
- Working Electrode: Electrode clamp



### Single chamber high-pressure electrochemical cell Model: P001-2

- Modification: Added optical window to P001-1 model.
- Max Pressure Resistance: 6Mpa.
- Volumes: Available in 50ml and 100ml, customizable as per needs.
- Photoelectrochemical Cell: Features a quartz glass optical window with >95% transmittance.
- Material: Ti construction.
- Valve Material: Stainless Steel 304.
- Reference Electrode: AgCl electrode (sold separately).
- Counter Electrode: Pt plate electrode (sold separately).
- Working Electrode: Electrode clamp (sold separately).



## High-pressure Electrochemical Cell Series

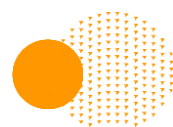
Small volume single chamber high-pressure electrochemical cell Model: P001-10



- Material: Constructed from high purity Ti.
- Max Pressure Resistance: 6Mpa.
- Volumes: Available in 10ml, customizable based on requirements.
- Valve Material: Stainless Steel 304.
- Reference Electrode: AgCl electrode
- Counter Electrode: Pt plate electrode
- Working Electrode: Electrode clamp

Model	Specifications
P001-1	50&100ml
P001-2	50&100ml, with optical window
P001-10	10ml

All sizes are standard sizes and can be custom-made according to specific requirements.



## High-pressure Electrochemical Cell Series

### Dual chamber high-pressure cell (with Internal replaceable film) Model: P002-1

- Material: Constructed from Ti.
- Max Pressure Resistance: 6Mpa.
- Volumes: Available in 20+20ml, with individual volumes of 20ml; customizable based on requirements.
- Valve Material: Stainless Steel 304.
- Electrode System: Three-electrode system.
- Electrode Configuration: Reference and working electrodes share a chamber, while the counter electrode is in a separate chamber.
- Reference Electrode: AgCl electrode
- Counter Electrode: Pt plate electrode
- Working Electrode: Electrode clamp



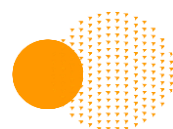
P002-1

### Dual chamber high-pressure cell (with Internal replaceable film) Model: P002-2

- The cell has been modified by adding an optical window on the basis of P002-1.
- The cell is made of high purity Ti.
- The maximum pressure resistance is 6Mpa.
- Available in volumes of 20+20ml.
- The cell with an optical window made of quartz glass, with a transmittance >95%.
- The valve is made of stainless steel 304.
- The individual volume is 20ml, and it can also be customized according to requirements.
- The reference electrode is a AgCl electrode.
- The counter electrode is a Pt plate electrode.
- The working electrode is the electrode clamp.



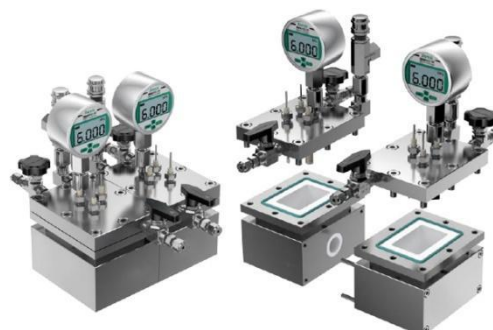
Model	Specifications
P002-1	20+20mL
P002-2	20+20ml, with optical window



## High-pressure Electrochemical Cell Series

### Dual chamber high-pressure cell (with externally exchange membrane) Model: P003-1

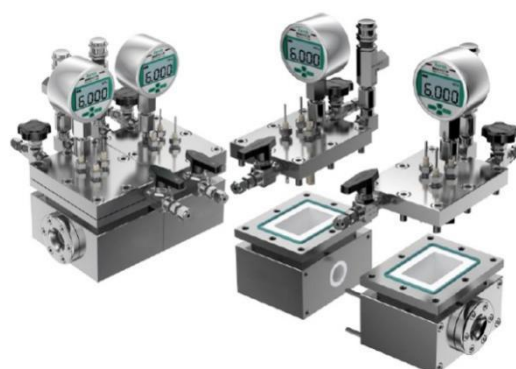
- The cell is made of high purity titanium.
- The maximum pressure resistance is 6Mpa.
- Available in volumes of 50+50ml, 100+100mL.
- The valve is made of stainless steel 304.
- The individual volume is 20ml, and it can also be customized according to requirements.
- Three-electrode system.
- The reference electrode is a pressure-resistant Ag/AgCl electrode.
- The counter electrode is a pressure-resistant platinum plate electrode.
- The working electrode is the electrode clamp.



P003-1

### Dual chamber high-pressure cell (with externally exchange membrane) Model: P003-2

- Modification: Added optical window based on P003-1 model.
- Material: Constructed from high purity Ti.
- Max Pressure Resistance: 6Mpa.
- Volumes: Available in 50+50ml and 100+100ml.
- Optical Window: Quartz glass with >95% transmittance.
- Valve Material: Stainless Steel 304.
- Individual Volume: 20ml, customizable based on requirements.
- Electrode Configuration: Three-electrode system.
- Electrode Setup: Reference and working electrodes share a chamber, while the counter electrode is in a separate chamber.
- Reference Electrode: pressure resistant AgCl electrode.
- Counter Electrode: pressure-resistant Pt plate electrode.
- Working Electrode: Electrode clamp.



P003-2

Model	Specifications
P003-1	50+50mL
P003-1	100+100mL
P003-2	50+50mL
P003-2	100+100mL

All sizes are standard sizes and can be custom-made according to specific requirements.

## High-pressure Electrochemical Cell Series

High-pressure flow test cell for gas diffusion Model: PFC-1\PFC-2



PFC-1



PFC-2

### Performance indicators

- Flow rate setting range: 0.01~50.00mL/min, with a setting increment of 0.01mL/min.
- Flow accuracy:  $\pm 1.0\%$  (10.00mL/min, 8.5MPa, water, room temperature).
- Flow stability:  $RSD \leq 0.3\%$  (10.00mL/min, 8.5MPa, water, room temperature).
- Maximum working pressure: 30MPa (0.10~20.00mL/min), 20MPa (20.01~50.00mL/min).
- Pressure Accuracy: Display pressure error within  $\pm 3\%$  or 0.5MPa.
- Pressure pulsation:  $\leq 0.4$ MPa (flow rate 10.00mL/min, pressure  $8.5 \pm 1.5$ MPa).
- Pump sealing: Pressure 30MPa, time 10min, pressure drop not exceeding 1.5MPa.
- Communication method: 485 interface communication.

### Flow Cell indicators

- The cell is made of Ti.
- The volume of the cell is 1ml.
- The dimension of the cell is 50mm  $\times$  50mm.
- The internal channel is 10 $\times$ 10 $\times$ 10mm.

### Physical specifications

- Weight: 12kg.
- Power supply: AC 220V ( $\pm 10\%$ ), 50Hz.
- Power consumption: 200W.
- Dimensions: 420mm $\times$ 300mm $\times$ 175mm (L x W x H).

Model	Specifications	Remark
PFC-1	10*10	The anode and cathode share a common channel
PFC-2	10*10	The anode and cathode have separate channels

All sizes are standard sizes and can be custom-made according to specific requirements.

## High-pressure Electrochemical Cell Series

Photocatalytic high-pressure electrochemical cell Model: P004



This electrochemical cell features a construction incorporating high-purity titanium for the cell body and high-borosilicate glass as the inner cell material. The utilization of a quartz optical window enhances its suitability for photochemical reactions. Furthermore, the cell chamber can be operated under vacuum conditions.

**Cell Material:** High-purity titanium

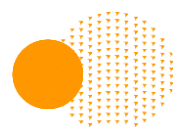
**Optical Window Material:** Quartz glass (Transparency >95%)

**Inner Cell Material:** High-borosilicate glass

**Vacuum Capability:** The electrolytic cell is vacuum-compatible.

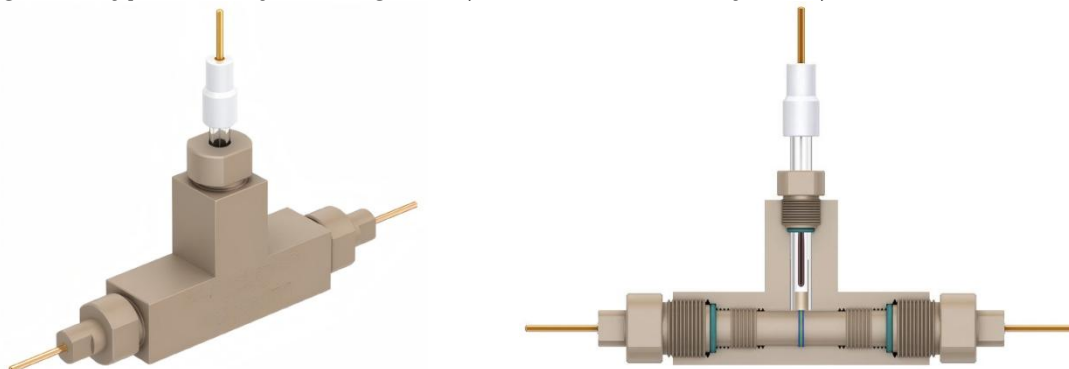
Model	Specifications
P004-1	Single-layer capacity is 50m
P004-1	Double-layer capacity is 50ml

All sizes are standard sizes and can be custom-made according to specific requirements.



## Specialized Function Cell Series

### Swagelok-Type Battery Testing Cell (Three-Electrode System) Model: B001-1



Cell body material: PEEK

Reference electrode: Ag/AgCl

Conductive medium connecting the positive and negative electrodes: Glassy carbon electrode (GC-Φ3)  
 Positive and negative electrodes are the test samples under evaluation; a membrane is sandwiched between the two test samples

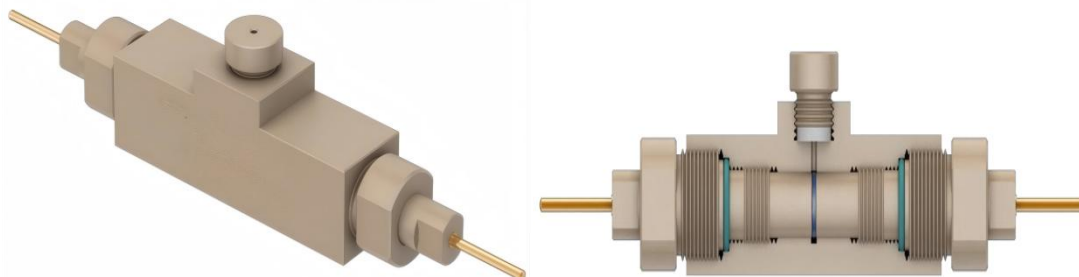
Designed to simulate coin-cell battery testing

By tightening the glassy carbon electrodes on both sides, the positive and negative samples are pressed into conductive contact, achieving the battery testing effect

Unscrew the reference electrode port to add electrolyte

Compatible sample sizes: 10 / 12 / 16 mm

### Swagelok-Type Battery Testing Cell (Two-Electrode System) Model: B001-2



Cell body material: PEEK

Conductive medium connecting the positive and negative electrodes: Glassy carbon electrode (GC-Φ3)  
 Positive and negative electrodes are the test samples under evaluation; a membrane is sandwiched between the two test samples

Designed to simulate coin-cell battery testing

By tightening the glassy carbon electrodes on both sides, the positive and negative samples are pressed into conductive contact, achieving the battery testing effect

Unscrew the top inlet/outlet liquid screw, which contains a gas-tight gasket

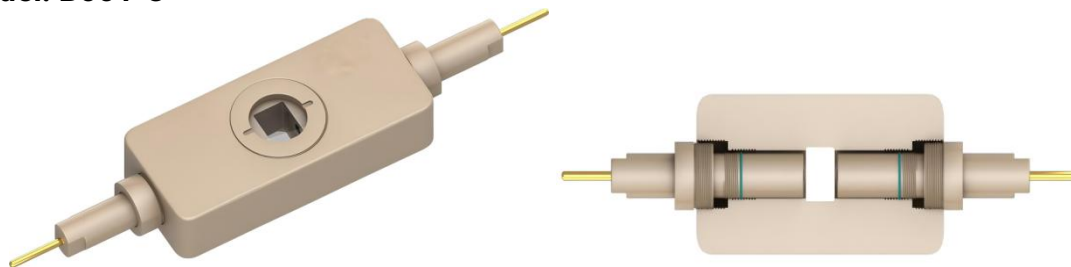
Compatible sample sizes: 10 / 12 / 16 mm

Model	Specifications
B001-1	Three-Electrode System
B001-2	Two-Electrode System

All sizes listed are standard sizes; custom configurations can be made upon request.

## Specialized Function Cell Series

### Visualized Swagelok-Type Battery Testing Cell (Two-Electrode System) Model: B001-3



Cell Body Material: PEEK

Conductive Medium Connecting Positive and Negative Poles: Glassy carbon electrode (GC- $\Phi 3$ )

Positive and Negative Poles: Test sample sheets, with a membrane sandwiched between the two sample sheets (membrane supplied by user)

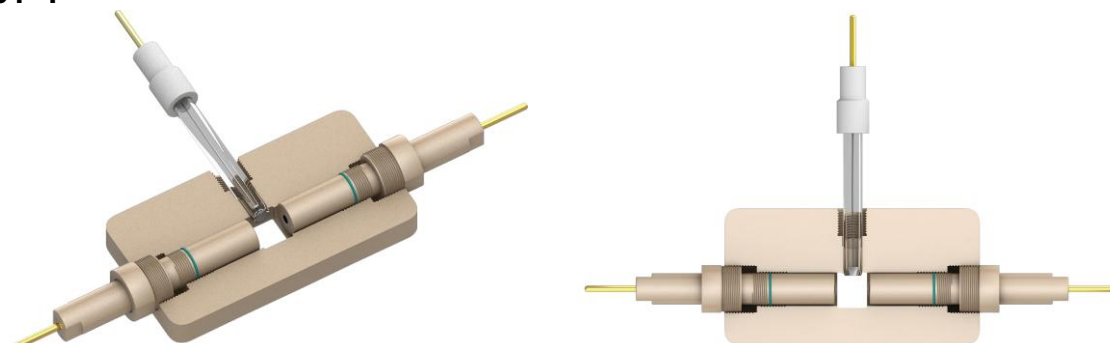
Application: Designed to simulate coin-cell battery testing

Operation: By tightening the left and right glassy carbon electrodes, the positive and negative electrode samples are pressed into conductive contact, achieving a battery testing effect

Optical Windows: Both sides of the cell are equipped with optical windows, enabling real-time observation of the electrochemical reaction process

Suitable Sample Sheet Sizes: 10 / 12 / 16 mm

### Visualized Swagelok-Type Battery Testing Cell (Three-Electrode System) Model: B001-4



Based on the B001-3 platform, the B001-4 has been modified by adding a reference electrode port for three-electrode electrochemical testing.

Model	Specifications
B001-3	Visualized Two-Electrode System
B001-4	Visualized Three-Electrode System

## Specialized Function Cell Series

### Metal-air battery test cell (three-electrode) Model: Zn-1

**Material:** PMMA (Polymethyl methacrylate)

**Cyclable Gases:** Capable of accommodating gases cycling loops.

**Customizable Dimensions:** Dimensions can be tailored according to specific requirements.

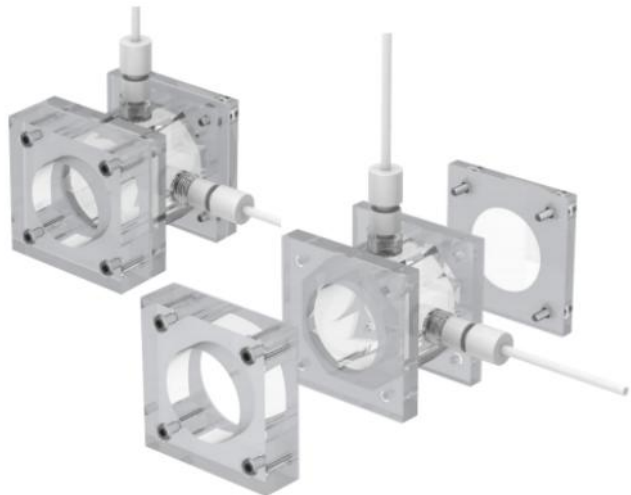


### Metal-air battery test cell (two-electrode) Model: Zn-2

**Material:** PMMA (Polymethyl methacrylate)

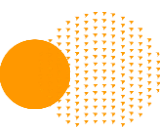
**Cyclable Gases:** Capable of accommodating gases cycling loops.

**Customizable Dimensions:** Dimensions can be tailored according to specific requirements.



Model	Specifications
Zn-1	30mL, 50mL
Zn-2	30mL, 50mL

All sizes are standard sizes and can be custom-made according to specific requirements.



## Specialized Function Cell Series

### Membrane conductivity test cell Model: C034-1



**Material:** PEEK case, platinum foil conductive component

**Purpose:** Designed for conducting experiments to measure the ion-exchange membrane conductivity (or other solid membranes).

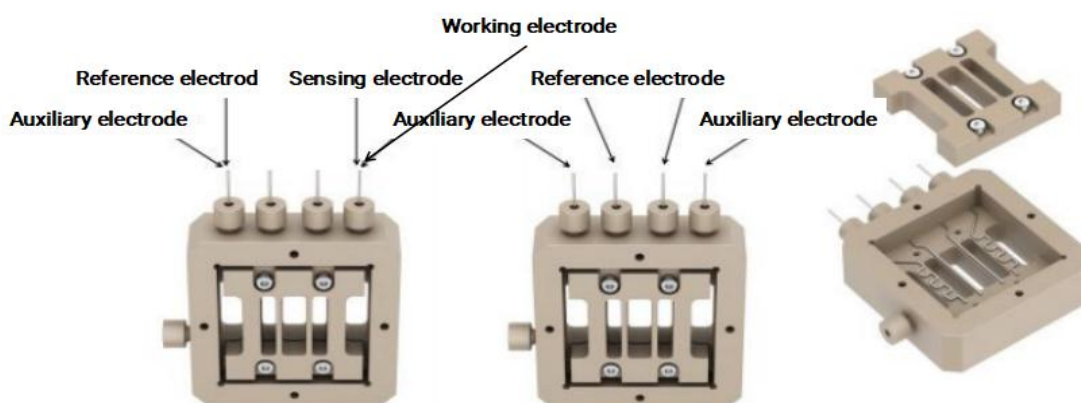
**Usage Instructions:** This electrochemical cell utilizes a two-electrode methodology. To ensure effective clamping, the four corners should be securely fastened by screwing, as depicted in the accompanying diagram.

### Membrane conductivity test cell Model: C034-2

**Material:** PEEK case, platinum foil conductive component

**Purpose:** Designed for conducting experiments to measure the ion-exchange membrane conductivity (or other solid membranes).

**Usage Instructions:** This electrochemical cell utilizes a two-electrode or four-electrode methodology. To ensure effective clamping, the four corners should be securely fastened by screwing, as depicted in the accompanying diagram.



Model	Specifications
C034-1	Two-electrode
C034-2	Four-electrode

All sizes are standard sizes and can be custom-made according to specific requirements.

## Specialized Function Cell Series

### Capacitive deionization device (desalination of seawater) Model: DQ-1

Capacitive Deionization (CDI) is a water desalination and purification technology based on the theory of double-layer capacitance. The fundamental principle involves the application of low voltage to the electrodes. Following this, cations, anions, or charged particles in the solution migrate towards the respective poles under the influence of the electric field and concentration gradient. They adsorb onto the electrode surfaces, forming a double layer, thereby achieving the desalination or purification objective. This technology is also referred to as the Electro sorption Technique (EST).

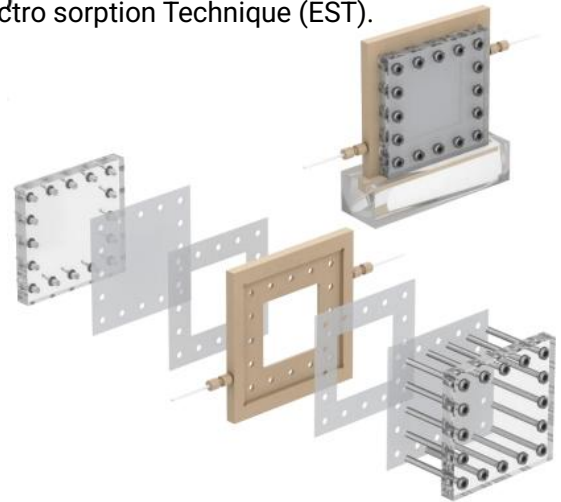
**Device Specifications:**

**Protective panels:** PMMA

**Device material:** PEEK

**Dimensions:** 140 x 140 x 10mm

**Anode-cathode distance:** <3mm



### Capacitive deionization device (desalination of seawater) Model: DQ-2

Improved upon the DQ-1 by incorporating a current collector plate to effectively achieve desalination or purification.

**Device Specifications:**

**Protective panels on both sides:** PMMA.

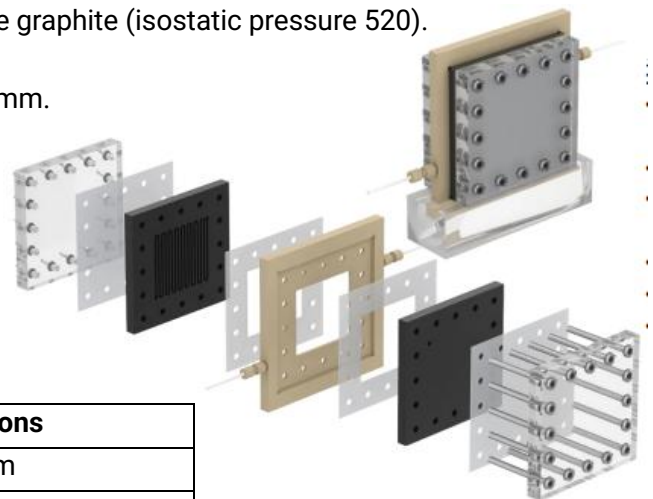
**Device material:** PEEK

**Current collector plate material:** Imported ultra-pure graphite (isostatic pressure 520).

**Current collector plate design:** Serpentine channel.

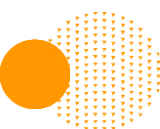
**Current collector plate dimensions:** 115 x 120 x 10mm.

**Device channel dimensions:** 50 x 50 x 2mm.



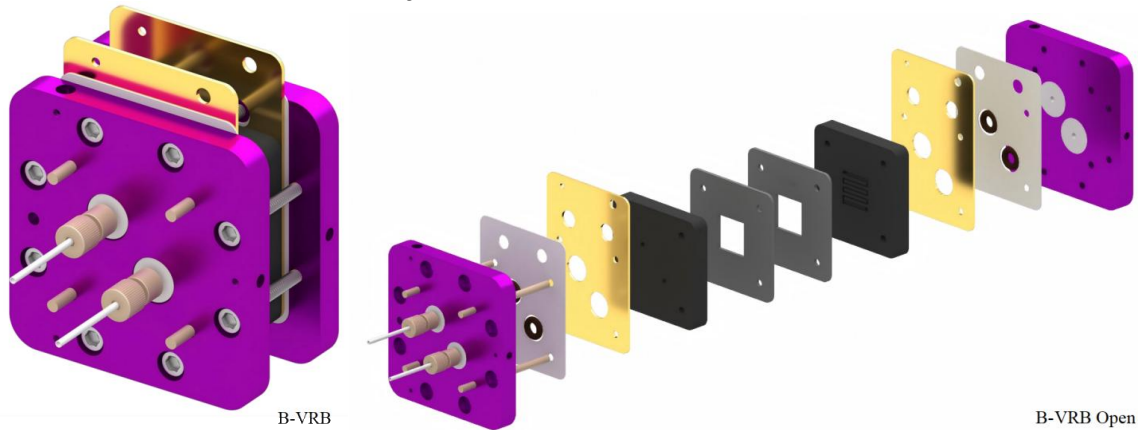
Model	Specifications
DQ-1	50*50mm
DQ-2	50*50mm

All sizes are standard sizes and can be custom-made according to specific requirements.



## Specialized Function Cell Series

### All-Vanadium Redox Flow Battery Test Cell Model: B-VRB



#### Description:

The Vanadium Redox Flow Battery (VRFB) Test Cell is designed for electrochemical evaluation and performance testing of vanadium flow battery systems. Featuring a robust structure, excellent cycling stability, and reliable ion transport, it provides an ideal platform for laboratory-scale research and long-duration energy storage studies.

#### Product Features:

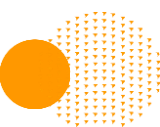
The test cell features a 50 cm<sup>2</sup> active area and can be customized to meet specific research requirements. Constructed with high-purity graphite bipolar plates and PEEK fixing rods, it offers excellent electrical conductivity, chemical resistance, and mechanical durability. Designed for thousands of charge-discharge cycles, the cell maintains stable vanadium ion transport and reliable performance, even under elevated-temperature operating conditions.

#### Specifications:

- Active area: 50 cm<sup>2</sup> (customizable)
- Cell structure: End plates, current collector plates, bipolar plates, and electrode frames
- Bipolar plate material: High-purity graphite
- Fixing rod material: PEEK
- Cycle life: Thousands of charge-discharge cycles

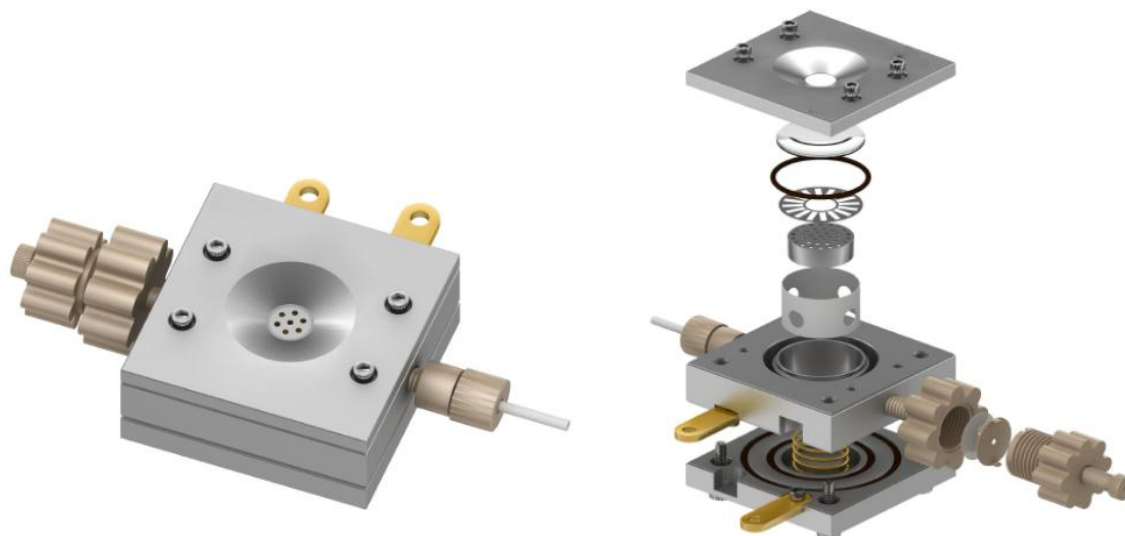
#### Applications:

- Vanadium redox flow battery (VRFB) research and development
- Renewable energy storage systems (wind and solar)
- Grid peak shaving and load shifting
- Emergency backup power systems
- Long-duration energy storage technology evaluation



## Specialized Function Cell Series

### In-situ Raman and Mass-Spectroscopy Electrochemical Coupled Cell



#### Description

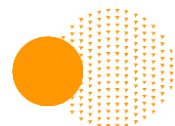
This integrated in-situ Raman and mass spectroscopy electrochemical cell is designed for synchronized electrochemical and spectroscopic measurements, enabling simultaneous structural and electrochemical characterization under controlled conditions. It provides a reliable and high-precision platform for studying reaction mechanisms and material behaviour in real time.

#### Product Features

- **Optimized optical design:** Working electrode-to-window distance  $< 2$  mm, with an 8 mm optical window diameter for enhanced Raman signal collection and spatial resolution.
- **High-purity titanium body:** Excellent corrosion resistance and structural integrity for diverse electrochemical environments.
- **Spectroscopy expansion capability:** Retains in-situ Raman testing while supporting mass spectrometry or gas analysis through independent sampling ports.
- **Superior sealing and compatibility:** Features chemically resistant O-ring and screw compression design for secure sealing and stability.
- **Compact and modular design:** Glovebox-compatible and easily assembled, ensuring convenient operation and flexibility.
- **Adjustable spring-loaded system:** Accommodates multiple sample types with self-adjusting contact pressure for optimal testing accuracy.

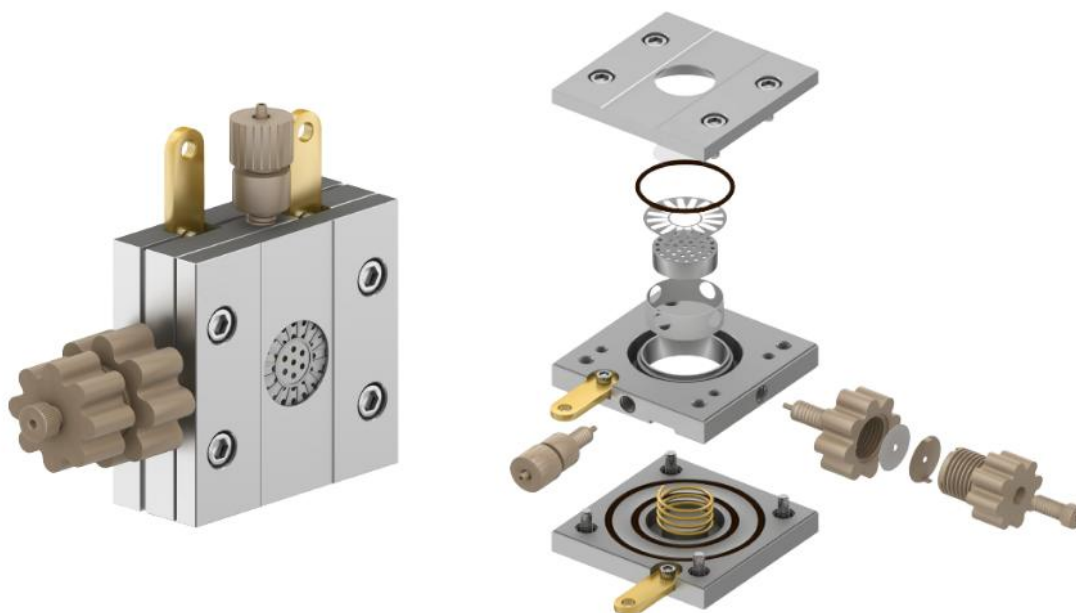
#### Specifications

- Optical window diameter: 8 mm
- Electrode-to-window distance:  $< 2$  mm
- Body material: High-purity titanium
- Compatible techniques: In-situ Raman, electrochemical analysis, mass spectrometry, gas detection
- Sealing type: Corrosion-resistant O-ring compression design
- Special features: Adjustable spring loading, glovebox compatibility, modular structure



## Specialized Function Cell Series

### In-situ XRD Dual-Electrode Mass Spectrometry Cell



#### Description

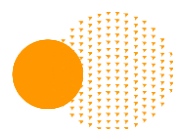
The in-situ XRD Dual-Electrode Mass Spectrometry Cell is an upgraded version based on the B002-XRD model, featuring an additional sampling port for mass spectrometric analysis. Designed with high-purity titanium, this cell allows simultaneous electrochemical and structural characterization, enabling real-time observation of reaction mechanisms under varying load and cycling conditions.

#### Product Features

- Constructed from **high-purity titanium** for superior corrosion resistance and mechanical strength.
- Equipped with **dual electrodes (anode and cathode)**, separated by a user-replaceable membrane.
- Supports **adjustable mechanical loading** through spring compression to study strain-related electrochemical behaviour.
- Compatible with **charging/discharging and performance testing systems**, suitable for a wide range of battery cycling and characterization experiments.
- Gas-tight sealing ensured by **chemical-resistant O-rings** and precision screw fittings.
- Can be used both **inside or outside a glovebox**, offering flexibility for different environments.
- Enables **non-destructive sample removal** after electrochemical tests, ensuring sample integrity.
- **Quick-assembly modular design** allows easy cleaning and maintenance.

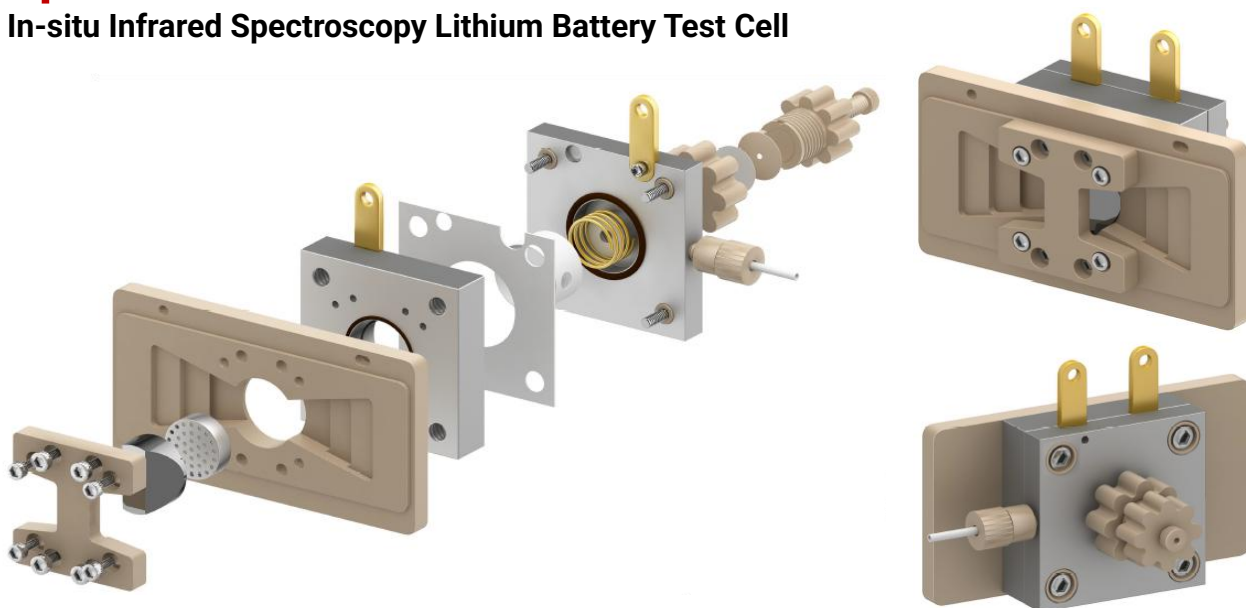
#### Specifications

- Electrode-to-XRD window distance: < 2 mm
- Optical window diameter: 8 mm
- Flow channel diameter: 8 mm
- Cell dimensions: 50 × 50 × 24 mm
- Material: High-purity titanium
- Suitable for: In-situ XRD, mass spectrometry, and electrochemical coupling studies



## Specialized Function Cell Series

### In-situ Infrared Spectroscopy Lithium Battery Test Cell



#### Description

This in-situ IR spectroscopy lithium cell is specifically designed for coupling electrochemical and infrared measurements, enabling real-time gas extraction and spectroscopic analysis during battery operation. Built from high-purity titanium and equipped with a crystalline infrared window, the cell provides high structural integrity and chemical resistance for precise spectroelectrochemical studies.

#### Product Features

- **Infrared window material:** Monocrystalline silicon (Si).
- **Cell body material:** High-purity titanium, offering excellent corrosion resistance and mechanical stability.
- **Dimensions:** 50 × 50 × 20 mm.
- **Enhanced functionality:** Integrated with a gas sampling port for direct connection to mass spectrometers or infrared spectrometers for real-time analysis.
- **Optical and chemical stability:** Si is preferred over conventional Ge, ZnSe, or SiO<sub>2</sub> windows due to its better chemical and mechanical stability under electrochemical conditions.
- Conventional materials such as Ge and ZnSe may undergo chemical reactions or structural degradation in acidic electrolytes, making them unsuitable for ATR-SEIRAS applications.
- **Spring-loaded pressure adjustment:** Ensures consistent contact between electrodes and separators while allowing flexible sample compatibility.
- **Double O-ring sealing system:** Provides excellent airtightness.
- **Glovebox-compatible modular design:** Allows convenient assembly, disassembly, and electrode replacement without compromising sealing integrity.

#### Specifications

- Infrared window: Monocrystalline silicon
- Cell material: High-purity titanium
- Size: 50 × 50 × 20 mm
- Sealing method: Dual O-ring compression
- Compatible analysis: In-situ infrared, gas analysis, and electrochemical studies
- Features: Real-time gas extraction, pressure-adjustable spring system, glovebox-compatible assembly

## Specialized Function Cell Series

### Electrochemical-luminescent cell

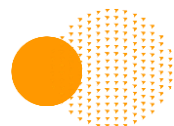


#### Description

This specialized electrolytic cell is designed for electrochemiluminescence (ECL) research. The cell body is made from durable, chemically resistant **PEEK material**, providing excellent stability under optical and electrochemical conditions. The base of the cell is equipped with a transparent illumination window, enabling light excitation from below. The working electrode uses **transparent ITO/FTO glass**, allowing optical access to the reaction interface, with an effective electrode area of **1 cm<sup>2</sup>**.

#### Product Features

- **Reference electrode:** Silver/silver chloride (Ag/AgCl).
- **Counter electrode:** Platinum wire electrode.
- **Cell body diameter:** 40 mm.
- **Base step diameter:** 29 mm × 1 mm.
- **Height between working, reference, and counter electrodes:** ≤ 55 mm.
- **Optical configuration:** Bottom illumination design for enhanced light collection efficiency.



## Specialized Function Cell Series

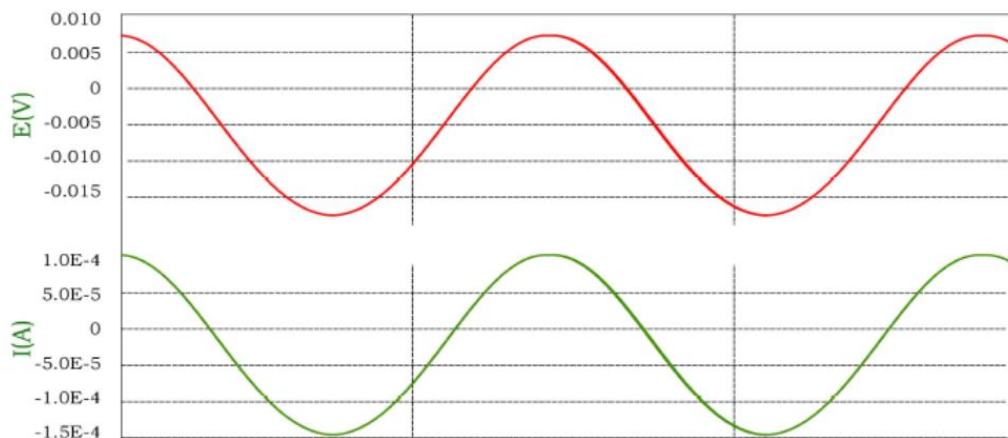
### Solid-State Battery Fixture Set

Solid-state batteries are a new type of battery technology characterized by high energy density, fast charge–discharge capability, and long lifespan. They are widely used in electric vehicles, wearable devices, and other fields. Solid electrolytes provide advantages such as leak-proofing, non-flammability, and suppression of dendrite growth, significantly enhancing battery safety.

Electrochemical impedance spectroscopy is an important tool for studying solid-state battery performance. By measuring impedance characteristics of the battery at different frequencies, it provides information related to charge transfer and electrochemical reactions. This data offers essential theoretical and technical support for developing high-performance solid-state batteries.

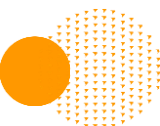


Waveform (Frequency (Hz): 8.00E+6, Current Amplitude: 2 mA)



Supports 8 MHz High-Frequency Impedance Testing

**Figure:** Voltage (E) and current (I) sinusoidal waveforms measured at **8 MHz** with a **2 mA** current amplitude, demonstrating the system’s capability for high-frequency impedance testing.



## Equipment Series

### Dual-Position Magnetic Stirrer Model: GU-2

The Dual-Position Magnetic Stirrer is a newly designed instrument specifically developed to complement H-type electrolytic cells. Drawing on the working principles of conventional stirrers, this product features two stirring positions that enable simultaneous stirring of both chambers of an H-type electrolytic cell. Furthermore, to accommodate electrolytic cells of different sizes, the two internal rotating magnetic fields adopt a floating structure, allowing the center-to-center distance between the two magnetic fields to be freely adjusted within a certain range, greatly improving convenience and efficiency in electrochemical experiments. Note: This equipment does not include stirring cells.

#### Specifications

Speed Range: 200~1600 rpm  
Adjustable Magnetic Field Spacing: 60~100 mm  
Rated Voltage: AC 12 V  
Rated Power:  $\leq 20$  W  
Dimensions: 240\*185\*85 mm



### Peristaltic Pump Model: EC200-01

The EC200-01 Peristaltic Pump is a fluid transfer product specifically developed by our company for the electrochemical testing field. This product features a knob-based adjustment method, enabling flexible and rapid speed regulation. Start/stop and forward/reverse switching are controlled by a toggle switch, ensuring convenient and reliable operation. When users need to quickly fill or flush the tubing, the full-speed button can be triggered with a single press. This is a highly operable new-generation peristaltic pump product.

#### Specifications

Tubing Size: 2\*1 mm  
Flow Rate Range: 0~35 mL/min  
Motor Speed: 0~200 rpm  
Power Supply: AC 220 V



## Equipment Series

### Gas-Liquid Mixed Flow Pump

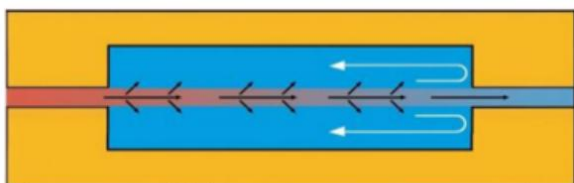
Model: EC200-02

The Gas-Liquid Mixed Flow Pump is a fluid transfer device specifically engineered for electrochemical testing applications. The pump is designed for operation on the anode side, where it efficiently removes large volumes of gas bubbles generated during experiments.

The system connects to 3 mm PTFE (polytetrafluoroethylene) tubing. When used with quick-connect fittings, it produces a strong shear force that disperses gas into fine mist-like bubbles. These microbubbles are rapidly carried away by the liquid stream, significantly improving gas removal and flow stability.

#### Key Features

- Designed for electrochemical systems, especially anodic gas evolution processes
- Enables rapid gas bubble removal to maintain stable reaction conditions
- Generates high shear mixing, breaking gas into fine dispersed phases
- Improves mass transfer efficiency and experimental reproducibility
- Compact and compatible with standard lab tubing and fittings
- Simple operation with adjustable flow via control knob



Shear Force Diagram

#### Specifications

- Flow Rate Range: 140–170 mL/min
- Operating Pressure: 90 kPa
- Power Supply: AC 220 V
- Rated Voltage: AC 24 V
- Load Current: 150 mA
- Tubing Compatibility: 3 mm PTFE tubing
- Dimensions: 145 × 95 × 90 mm



### High-Pressure Constant-Flow Pump Model: HP300-01

The HP300-01 High-Pressure Constant-Flow Pump is a high-pressure, high-flow liquid delivery product specifically developed by our company for the electrochemical testing field. This product features a knob-based adjustment method, enabling rapid adjustment to the flow rate required by the user. When users need to quickly fill or flush the tubing, the full-speed button can be triggered with a single press. The external interface adopts a 1/4-28UNF threaded design, compatible with most users' tubing connection requirements. Additionally, the product supports multi-channel expansion based on user requirements.

#### Specifications

- Flow Rate Range: 0~300 mL/min
- Flow Rate Resolution: 1 mL/min
- Pressure Tolerance Range: 0~0.8 MPa
- Tubing Interface: 1/4-28 UNF
- Power Supply: AC 220 V; 50 Hz / 60 Hz
- Rated Voltage: AC 24 V
- Operating Environment: Temperature 0~40 ° C; Humidity ≤ 80%



#### Note

1. After use, be sure to flush the tubing with clean water.
2. After 3000 hours of operation, the unit must be returned to the factory for maintenance.

## Equipment Series

### Membrane Electrode Heating Temperature Controller Model: EC200-02/EC200-302

This is a compact heating and temperature measurement instrument designed for membrane electrode applications. The instrument is small and portable, with timing capability. Temperature control utilizes fuzzy PID control for rapid heating response and accurate temperature regulation, with enhanced temperature setting and adjustment. Industry-leading manufacturing processes and design schemes ensure high reliability and strong anti-interference performance. Compared with traditional PID control, fuzzy PID control offers smaller temperature overshoot, faster stabilization time, and improved temperature control accuracy. The auto-tuning function enables more precise heating and temperature control.

#### Specifications

- Dimensions: L144\*W198\*H126 mm
- Weight: 1.5 kg
- Display Resolution: 0.1 ° C
- Temperature Measurement Accuracy: 0.3% FS ± 1 ° C or 0.3% FS ± 0.1 ° C
- Power Supply: 100~240 VAC
- Operating Environment: Temperature -10~60 ° C;
- Humidity 0~90% RH
- Temperature Control Range: RT + 10~300 ° C



## Mass Flow Meter and Controller Model: D07-19B/D08-1FD

### Product Features

2.4-inch LCD display screen, showing input/output signal types, real-time flow rate, flow rate setpoint, flow rate unit, valve control, purge, shutdown, and communication type indicators. Flow rate can be set via digital rotary encoder, supporting both step flow and continuous flow settings.

The device automatically saves set parameters; data is retained after power loss.

Silicone rubber keypad for aesthetic appearance, comfortable operation, and long service life.

Reserved RS485/RS232 interface, supporting Modbus RTU protocol.

Parameters can be configured or modified via host computer software, offering convenient and efficient operation with calibration support.

Signal interface and usage are fully compatible with the original D08-1F.

Uses a dedicated national standard AC connector for enhanced safety.



## Equipment Series

### Rotating Disk/Ring Electrode System Model: ECR-6100C (Japan)

The ECR-6100C (EC-Frontier Japan) is a compact, lightweight rotating electrode system with separated rotating and control units, supporting a wide speed range of 80 – 8000 rpm for versatile experimental applications. The shaft operates at any angle — tilted up to 45° to eliminate foam during measurement, or rotated 180° for catalyst coating and dispersion in lieu of a spin coater. A maintenance-free brushless motor with real-time safety monitoring and anomaly alarm ensures reliable operation, while mechanical coupling between shaft and electrode minimizes noise. Compatible electrodes include RDE, RRDE, and rotating electrode sample holders, and the system pairs with various electrolytic cells such as spectroelectrochemical cells and inverted Raman cells. The reaction cell is upgraded for high-pressure operation based on the atmospheric H-type in-situ infrared test cell technology, featuring a full high-purity titanium body, stainless steel bolt fastening for sealing, and internally fixed electrodes for stable and safe operation.

#### Applications

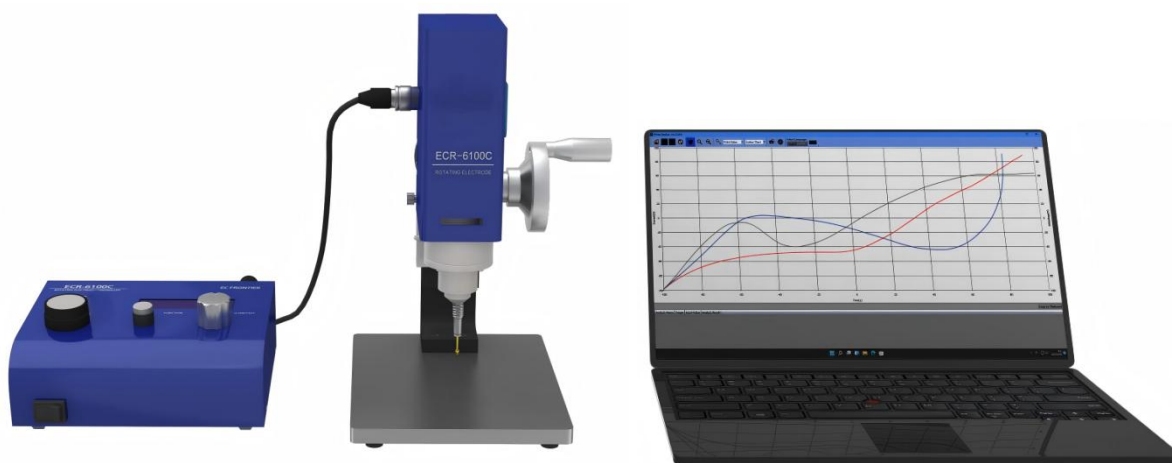
1. Quantitative analysis of reaction electron number and charge transfer rate.
2. Quality control of electroplating solution additives.
3. Investigation of metal corrosion phenomena.
4. Performance evaluation of fuel cell catalysts, etc.

#### Product Features

**Compact Structure:** Space-saving design at approximately A4 size, with separated rotating and control units weighing only 4 kg and 0.9 kg respectively. Lightweight enough for single-hand operation, expanding experimental versatility.

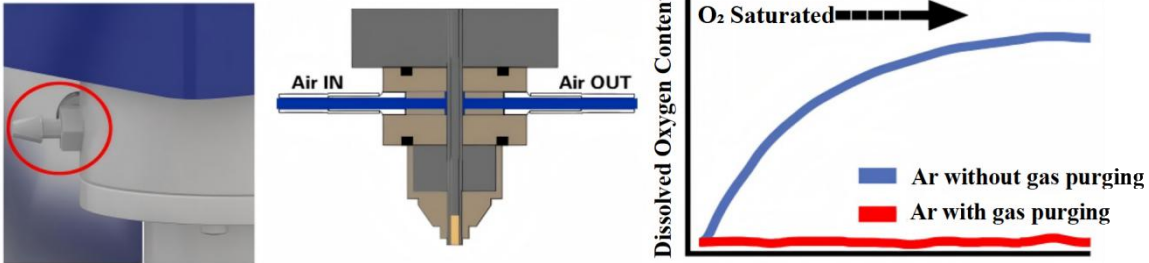
**Inert Gas Purging of Shaft:** Inert gas can be introduced through the shaft to control the internal gas environment, suppressing component damage caused by organic solvents and acid vapors.

**Remote Control:** Supports both manual and PC-based remote operation. Rotation control via external commands, with voltage input through external terminals for additional control.



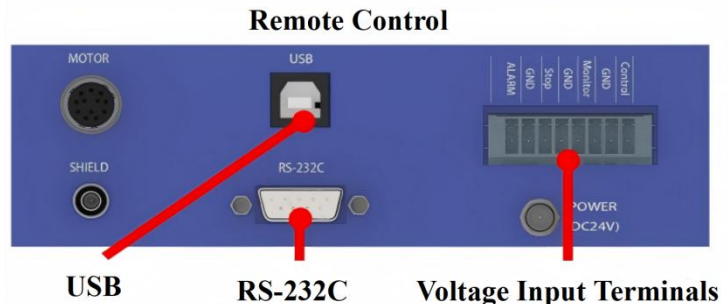
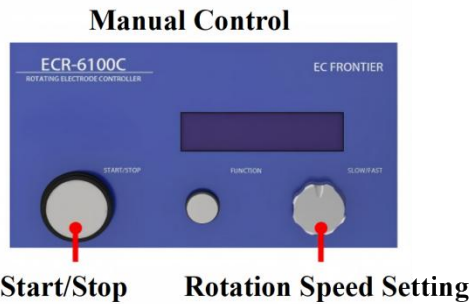
### Shaft Inert Gas Purging Mechanism

A mechanism is provided to purge inert gas from the tubing through the shaft, enabling control of the gas environment inside the electrolytic cell and suppressing component damage caused by organic solvents and acid vapors.



### Multiple Rotation Control Methods

Start/stop can be manually controlled from the front panel. Additionally, remote control via USB is supported using the included control software. The system can also be expanded for synchronized control with our P/Gstat (ECstat) series. Rotation control via external commands is available through RS-232C equipped devices. Furthermore, rotation can be controlled by voltage input to external terminals, and since rotation speed is output as voltage, control is also possible from devices with voltage input/output capability.



## Equipment Series

### Electrochemical Workstation Model: ECstat-302C



This is a compact yet versatile electrochemical measurement device, supporting all electrochemical measurements except electrochemical impedance spectroscopy, as well as charge and discharge measurements.

#### Product Features

**Compact Design & Versatile Functionality:** Wide current range (5 ranges from 3  $\mu$  A to 300 mA + auto range), controlled potential ( $\pm 6.4$  V), and 22-bit A/D converter. At W190\*D100\*H43 mm, the chassis is compact enough for single-hand installation.

**Included Software (ECstat Basic):** Supports all electrochemical methods except electrochemical impedance spectroscopy, including CV, OCP, LSV, galvanostatic, potentiostatic, DPV, NPV, SWV, and pulse modes.

**Measurement Sequence Execution:** Optional ECstat Advance software enables automated execution of arbitrary measurement sequences, supporting charge/discharge testing with Capacitance-Voltage, Voltage-dQ/dE, Time-Voltage/Current, and Cycle Number-Efficiency/Voltage analysis.

**Simultaneous Device Control:** ECstat Advance supports concurrent control of multiple devices (ECstat-302, rotating electrode systems, environmental chambers, quartz crystal measurement devices) with inter-device coordination via event function.

**Multi-Electrode Potential Measurement:** Measures WE-RE, WE-CE, and CE-RE voltages during electrochemical testing. In charge/discharge cycling, voltages between positive/negative electrodes and reference electrodes are also measurable.

**Operation During Measurement:** Potential can be held or reversed at any time during Cyclic Voltammetry (CV).

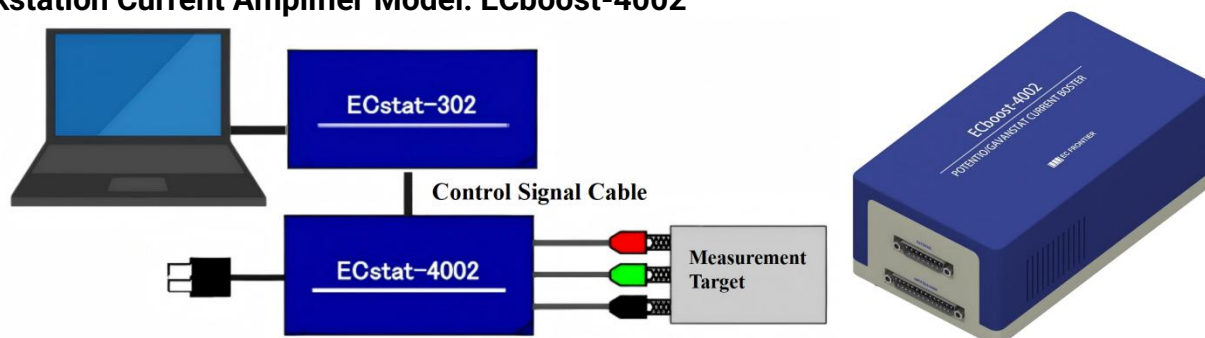
**Wireless Communication as Standard:** Supports wireless operation from a computer via wireless router in addition to wired communication. Connection can be recovered and measurement resumed after temporary disconnection.

**Glovebox Compatible:** Constructed with vacuum-compatible components for use in gas-substituted gloveboxes.

**IR Correction Function:** Liquid resistance correction adjustable from 61  $\mu\Omega$  to 25 M $\Omega$  for high solution resistance measurements.

## Equipment Series

### Workstation Current Amplifier Model: ECboost-4002



This device can be easily connected to the ECstat via a connector harness. When used in combination, the ECboost-4002 achieves current output of up to 300 mA. ECboost-4002 is sold as a bundled set with 302C.

### Specifications

Potentiostat/Galvanostat Analyzer ECstat-302 (Product Code: 21050)		
Item	Specification	
P.S.	Max Output Voltage / Max Output Current	$\pm 13 \text{ V} / \pm 30 \text{ mA}$
	Control Potential	$\pm 6.4 \text{ V}$
	Current Ranges	$\pm 3 \mu\text{A}, \pm 30 \mu\text{A}, \pm 300 \mu\text{A}, \pm 3 \text{ mA}, \pm 30 \text{ mA}$ (5 ranges + auto-range)
	Min Potential Resolution / Min Current Resolution	0.2 mV / approx. 180 fA (at 3 $\mu\text{A}$ range)
G.S.	Max Output Current / Max Output Voltage	$\pm 30 \text{ mA} / \pm 13 \text{ V}$
	Potential Range	$\pm 12.8 \text{ V}$ (single range)
	Min Setting Resolution / Min Potential Resolution	100 pA (below 3 $\mu\text{A}$ ) / approx. 800 nV
Noise Filter	1 Hz, 10 Hz, 100 Hz, OFF	
Control Interface	USB / Wireless LAN IEEE 802.11b/g/n	
Power Supply	DC 6V 1.8A (AC adapter included)	
Dimensions / Weight	W190*D100*H43 mm (excluding protrusions) / approx. 0.9 kg	
Accessories	USB drive (ECstat Software & Manual), battery cable, AC adapter, alligator clips, lead resistor, USB cable, inspection certificate	
Software (ECstat Advance) (Product Code: 21051)		
PC Requirements	OS: Windows 7, Windows 8.1, Windows 10, Windows 11	
Internet Connection	Required only during installation, depending on OS status	
Required Interfaces	USB 2.0 or 3.0 $\times 2$ slots or more	
Accessories	USB drive, USB dongle	
ECstat Current Booster ECboost-4002 (Product Code: 21064)		
P.S.	Max Output Voltage / Max Output Current	$\pm 13 \text{ V} / \pm 300 \text{ mA}$
	Control Potential	$\pm 6.4 \text{ V}$
	Current Ranges	$\pm 3 \mu\text{A}, \pm 30 \mu\text{A}, \pm 300 \mu\text{A}, \pm 3 \text{ mA}, \pm 30 \text{ mA}, \pm 300 \text{ mA}$ (6 ranges total)
	Min Potential Resolution / Min Current Resolution	0.2 mV / 100 pA (at 3 $\mu\text{A}$ range)
G.S.	Max Output Current / Max Output Voltage	$\pm 300 \text{ mA} / \pm 13 \text{ V}$
	Voltage Ranges	$\pm 0.64 \text{ V}, \pm 1.28 \text{ V}, \pm 6.4 \text{ V}, \pm 12.8 \text{ V}$ (4 ranges total)
	Min Setting Resolution / Min Potential Resolution	100 pA / 20 $\mu\text{V}$ (at $\pm 0.64 \text{ V}$ range)
Control Interface	Connector harness	
Power Supply	100–240 VAC, 50/60 Hz	
Dimensions / Weight	W190*D100*H75 mm (excluding protrusions) / approx. 0.85 kg	
Operating Temperature / Humidity	5–40°C / 10–90% (no condensation)	

## Equipment Series

### In-Situ Differential Electrochemical Mass Spectrometer Model: PM-DEMS

The next-generation multi-functional in-situ differential electrochemical mass spectrometer (PM-DEMS) is designed for real-time qualitative and quantitative analysis of gaseous products, volatile intermediates, and final products generated during electrochemical reactions.

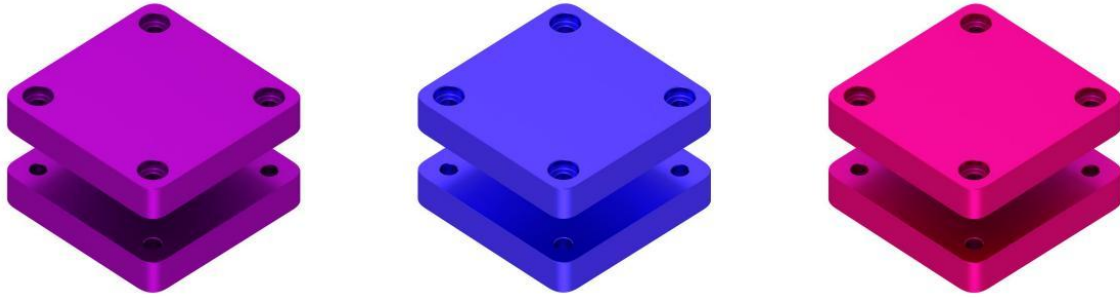
The in-situ differential electrochemical mass spectrometer is a modern electrochemical in-situ testing technique developed by combining electrochemistry with mass spectrometry. By utilizing a hydrophobic gas-permeable membrane as the interface between the electrochemical reaction and the mass spectrometer, along with the advantages of an excellent vacuum system that reduces response time, it enables detection immediately after electrochemical reaction products are formed.

It can perform in-situ detection of volatile gaseous products, kinetic parameters, intermediates, and their structural properties during electrochemical reactions. When electrode reaction products are co-evolved, the in-situ differential electrochemical mass spectrometer technique can simultaneously determine the Faradaic current of each product as a function of electrode potential or time.



## Equipment Series

### Foam Metal Levelling Press



#### Description

The Foam Metal Levelling Press is designed to flatten and standardize foam metal electrodes prior to cell assembly. By improving surface uniformity and electrode contact, it enhances electrolyte wetting and contributes to more reliable electrochemical performance.

#### Product Features

The press accommodates foam metal electrodes with thicknesses of 0.3 mm, 0.5 mm, and 1.0 mm, each identified by a dedicated color code for quick selection. Its simple screw-tightening mechanism enables fast and reproducible sample preparation, while the compact design ensures uniform compression across the electrode surface.

#### Specifications

- Compatible thicknesses: 0.3 mm (Blue), 0.5 mm (Purple), 1.0 mm (Red)
- Maximum pressing area: 25 × 25 mm
- Compression method: Mechanical screw tightening
- Recommended operation: Diagonal screw-tightening sequence for uniform pressure distribution

#### Applications

- Foam metal electrode preparation
- Flow battery electrode conditioning
- Fuel cell electrode processing
- Electrochemical cell assembly and testing
- Research on porous electrode materials