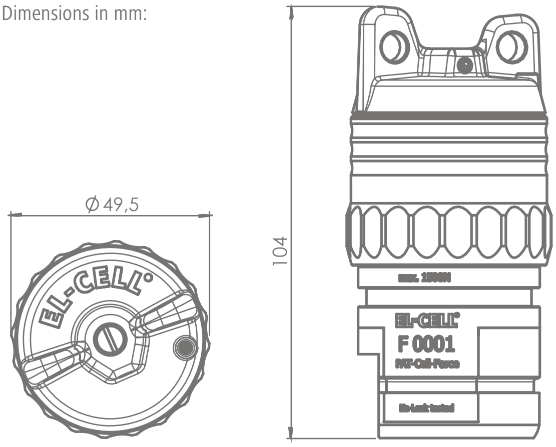
electrochemical test equipment

Dimensions in mm:



PAT-Cell-Force

Operando test cell for use with solid-state and liquid electrolytes. With up to 60 MPa applied pressure!*

The PAT-Cell-Force is an operando test cell that allows precise adjustment and measurement of the mechanical force applied to the cell stack. With forces up to 1700 N, corresponding to pressures of up to 60 MPa depending on electrode diameter, it is particularly suited for characterizing solid-state batteries, but also compatible with liquid-electrolyte lithium-ion systems.

The cell uses the patented PAT-Core system to ensure precise stack alignment. For liquid electrolytes, PAT-Core components with 18 mm electrode diameter are available for 2- and 3-electrode measurements, using a special upper plunger. For solid-state electrolytes, the PAT-Solid-Core variant has been developed, featuring carbide plungers and ceramic insulation sleeves, and enabling direct pressing of the specimen using the Solid-State Pressing Device.

The PAT-Solid-Core features a 6 mm electrode diameter allowing up to 60 MPa applied pressure throughout cycling, while integrated sensors measure gas pressure and temperature. The PAT-Cell-Force connects cable-free to EL-CELL potentiostats, supports digital sensor readout via I^2C, and offers robust sealing for reliable long-term measurements, including automatic recognition through the PAT-Button.

Key Features

- Force adjustment and measurement, up to 1700 Newton
- Built-in temperature, force and gas pressure sensors
- Supports PAT-Core and PAT-Solid-Core components for cell stack configuration

* at 6 mm electrode diameter

Use Cases:

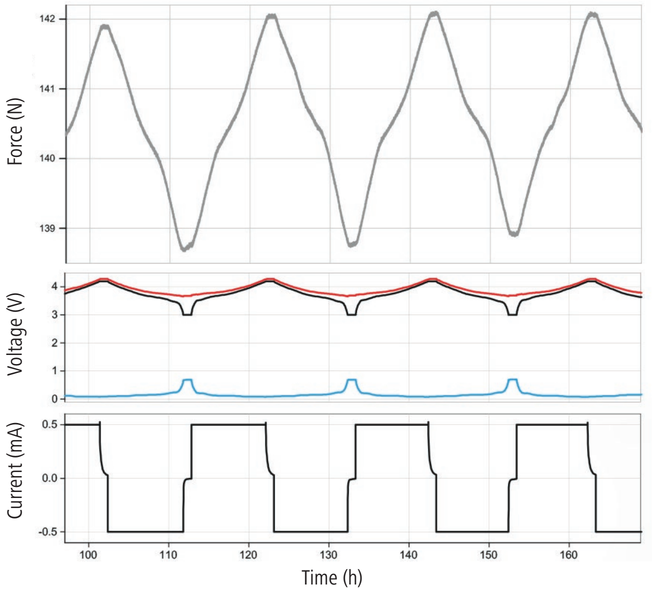
- Testing of solid-state electrolytes
- Testing of aprotic chemistries with liquid electrolytes
- Adjust and measure the applied force (up to 1700N)
- Additional monitoring of gas pressure and temperature
- Electrochemical Cycling with 2- or 3 Electrodes

Product website:

Specifications	
Height / diameter	104 mm / 49.5 mm
Weight	0.8 kg
Separator diameter (PAT-Core)	21.6 mm
Applied pressure on cell stack	5.9 MPa @ 18 mm / 60 MPa @ 6 mm
Electrode diameter	PAT-Core: 18 mm / PAT-Solid-Core: 6 mm
Force sensor	up to 1700 Newton
Temperature sensor	-20 to 80 °C
Gas pressure sensor	0 to 3 bar abs.
Operational temperature	-20 to 80 °C

Sample Test Results

NCM 111 vs Graphite in LP30



Modular Cell Stack Setups

PAT-Solid-Core
for sulfide solid-state electrolytes

PAT-Core
for aprotic chemistries with liquid electrolytes

Sample Setups

PAT-Cell-Force connected to a PAT-Tester-x-8 potentiostat for cycling.

PAT-Cell-Force connected to a PAT-Terminal-1 to adjust initial stack force. The PAT-Terminal-1 can also be used for cycling, if used in a PAT-Tester-x setup.

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