

## PRODUCT INFO SHEET

### Coin Cell Module for Single-Resonance (X) Static *In-Situ/Operando* ATM WB NMR Probe for Battery & Energy Storage Materials Research

#### Description

This specialized module enables single-resonance (X-channel) static wide-bore probes to be used for *in-situ/operando* NMR analysis of typical coin and pouch cells. This upgrade is available for wide-bore probes operating on 200 MHz to 400 MHz systems. The tuning range covers nuclei from  $^{13}\text{C}$  to  $^{31}\text{P}$ , with lower frequency nuclei, such as  $^6\text{Li}$ , to be discussed. The probe features integrated automatic tuning and matching.

The coin cell module fits coin cells up to size CR2032 (e.g. made from stainless steel or Titanium) and pouch cells up to 25 x 24 x 7 mm (e.g. made from Aluminum). In addition, the probe remains fully compatible with all ePROBE *in-situ/operando* plastic capsule cells. The probe is equipped with three current collector ports next to the RF coil, through which an electrochemical cycler can be connected to the sample/cell to perform NMR experiments. Integrated channels for optional gas or liquid flow through the cell enable research on electrocatalytic reactions, metal–air batteries and similar chemistries.





## Technical Data

### RF Capabilities

Fields: 200 MHz to 400 MHz (Wide-Bore); other fields to be discussed

X-Range:  $^{13}\text{C}$  to  $^{31}\text{P}$ ;  $^6\text{Li}$  and/or other nuclei to be discussed

Tuning/Matching: Integrated automation

### Temperature Control

VT Range:  $-30^\circ\text{C}$  to  $+100^\circ\text{C}$

### Electrochemistry

Ports: Three current collector ports for working, counter, and reference electrode  
Cycling with up to at least 2 A current  
Compatible with all electrochemical cyclers

Samples/Cells: Coin cells up to size CR2032 (e.g. stainless steel or Titanium)  
Pouch cells up to 25 x 24 x 7 mm (e.g. Aluminum)

Standard use: plastic cell capsule cells (OD 8, 11, and 15 mm)  
Standard use: solid-state cells (OD 11 mm)  
Standard use: plastic-bag cells and home-built/customized cells

Flow Chemistry: Standard use: flow in- and outlet ports, e.g. for electrocatalysis cells

### Options:

F—H-Range: Coin cell module for double-resonance ( $\text{H—X}^{\text{fix}}$  or  $\text{F—X}^{\text{fix}}$ ) static WB NMR probes is available upon request. Note, the X-range will be fixed to a single frequency, e.g.  $^7\text{Li}$  or  $^{23}\text{Na}$ .

