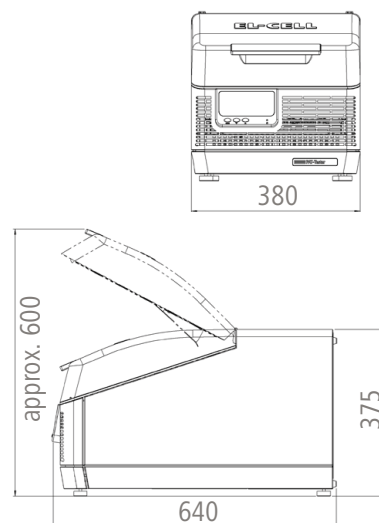




Dimensions in mm:



## PAT-Tester-i-16

### Our all-in-one solution for multi-channel testing.

The PAT-Tester-i-16 is a highly integrated, multi-channel battery tester with up to 16 independent test channels and a temperature-controlled cell chamber (+10°C to +80°C). Due to its patented wireless connection between test cell and potentiostat, it saves space in the laboratory and eliminates the need for cabling.

Each test channel has full PStat / GStat / and EIS capabilities (without multiplexing) and unique features such as the connection matrix, which allows software-controlled switching between half and full-cell measurements without reconnecting cables.

The internal impedance analyzer can simultaneously record the impedances of both half cells while performing constant current cycles or voltammetric experiments. This way, it can record the DC and AC characteristics of an inserted test cells at virtually the same time!

The PAT-Tester-i-16 is optimized for operation with PAT series test cells. Other cell types, like T-cells and pouch cells, can be connected via adapters. Thanks to its LAN connection, it can be monitored and controlled from any PC in the network.

### Key Features

- Up to 16 independent test channels with fully featured potentiostat/galvanostat/impedance analyzer
- Integrated Peltier temperature control (+10° C to +80° C) with anti-condensing system
- Simultaneous recording of both half-cell voltages and sensor signals (e.g. gas pressure, stack force and electrode expansion)
- Software controlled switching between control modes: full cell, cathode half cell, anode half cell

Product website:



## Specifications

### General

Width / Depth / Height	380 / 640 / 375 mm
Weight	26 kg (without test cells)
Channels per device	1 to 16
Voltage	-7 V to +7 V
Current	±100 mA
Cell connection / Electrode connection	3 electrodes plus sense wires, switch matrix
ADC	2 x 24 bit
DAC	1 x 18 bit
Bandwidth ranges (Stability Factor)	500 kHz (fast), 50 kHz (medium), 5 kHz (slow)
Acquisition Time (Time Base)	1 ms
Internal Sample Buffer	100 GByte
Computer Interface	1 GBit Ethernet, Runs standalone, Multiuser

### Voltage

Acquisition of ...	Full cell voltage, both half cell voltages, auxiliary voltage
Measurement Accuracy	±0.02% of FSR
Control Resolution	57 µV (18 Bit)

### Current

Current Ranges	±100 mA, ±10 mA, ±1 mA, ±100 µA, Autorange
Measurement Noise floor	<1 µA @ 100mA, <100 nA @ 10mA, <10 nA @ 1mA, <1 nA @ 100µA
Measurement Accuracy	±0.05% of FSR
Control Resolution	1 nA min. (18 bit)

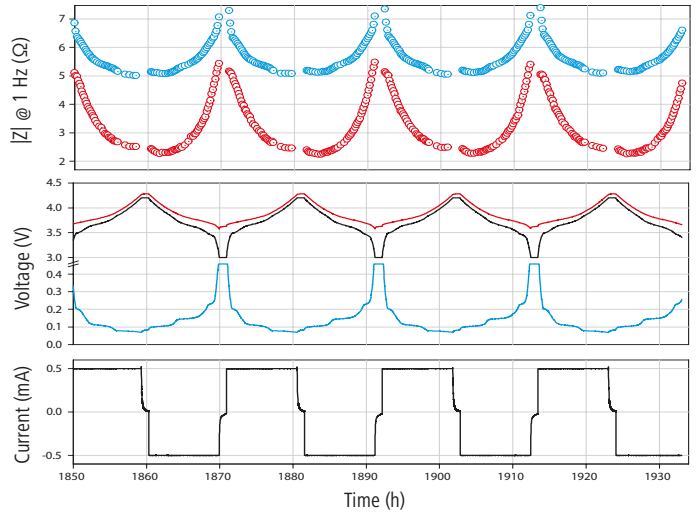
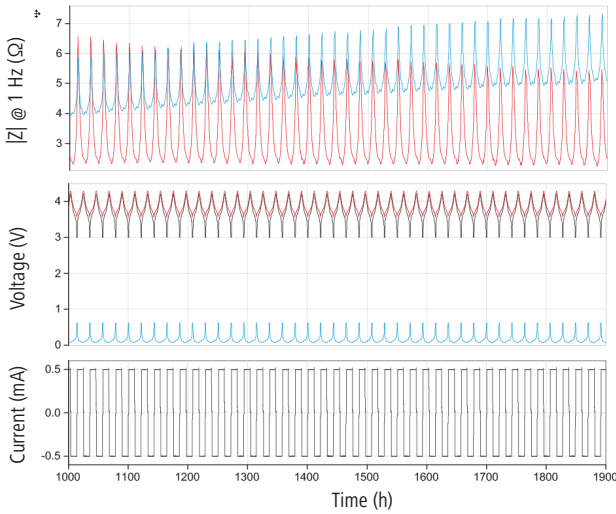
### Impedance (each channel)


Frequency range	100 µHz to 100 kHz
Impedance mode	PEIS and GEIS (simultaneous measurement of full- and half-cell impedances)
Impedance range	1 mΩ to 100 MΩ

### Other

Temperature Chamber	+10°C to +80°C, software controlled
Additional data input (each channel)	Digital (I <sup>2</sup> C) sensor signal (e.g. for cell temperature) Analog sensor signal( e.g. for gas pressure)
Calibration	Fully automatic self-calibration with internal voltage reference and three internal calibration cells
Cell Identification	PAT-Button with unique serial number stored in EEPROM

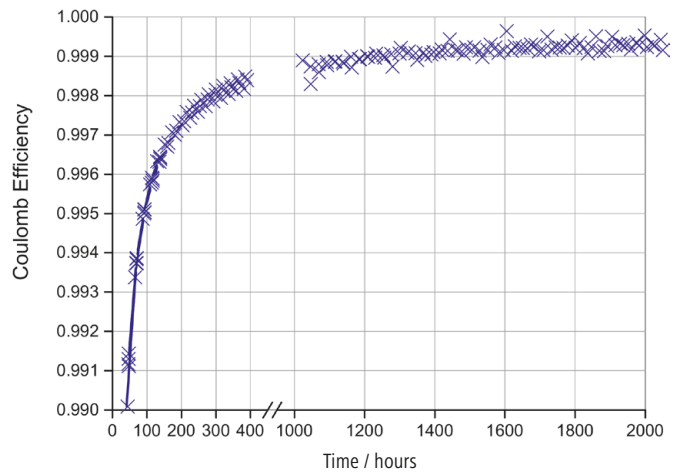
**Sample test result**





**Setup details:**

- NCM 111 vs Graphite
- Li metal reference ring
- CC-CV cycles at 0.1 C rate, 25°C
  
- 2000 hours experiment time
- Coulomb efficiency > 99.9 %
- Capacity retention 96 %
  
- Test cell: PAT-Cell
- Potentiostat: PAT-Tester-i-16



**Accuracy contour plot**

