

IBC®

Isothermal Battery Calorimeter Product Range



Small cell (*IBC & IBC-CC*)

- Coin AA 18650 D
- Cell size specific

Prismatic pouch EV cells (*IBC-P*)

- Prismatic

Isothermal Air Calorimeter (*IAC*)

- Complete devices
- Lithium ion cells or modules



thermal hazard technology

Offices in ENGLAND, USA, CHINA, INDIA
Representation Worldwide

IBC Isothermal Battery Calorimeter Product Range

The IBC Isothermal Battery Calorimeter is available in several variants to accommodate different battery sizes. With connection to an external cycler the IBC, IBC-CC and IBC-P provide accurate and easy testing of heat output from charging and discharging a single battery.

Heat occurring during the charging and discharging of batteries is largely due to their internal impedance. Characterisation of this heat at different operating temperatures is vital for efficient thermal management of cells in packs or modules.

The IAC is an Isothermal Air Calorimeter for measurement of heat flux from electronic devices, lithium ion cells and modules. It's large sample chamber measures 275 x 275 x 175mm accommodating a wide variety of sample sizes. Power compensation control allows for accurate measurement of heat flux.

IBC



IBC

Cell format: Cylindrical

Study battery...

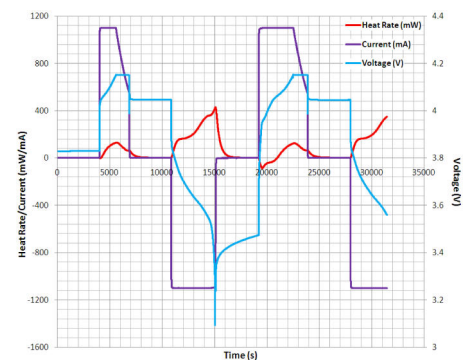
- Stability
- Efficiency
- Performance
- Life cycle

Quantify heat release...

- under applied load conditions with connection to external cycler.

Measure change of heat release with...

- Chemistry modification
- Applied load
- Size and shape
- State of charge
- Environmental temp.
- Age



1.5 AH Lithium Battery
Charge and Discharge Cycle 1A

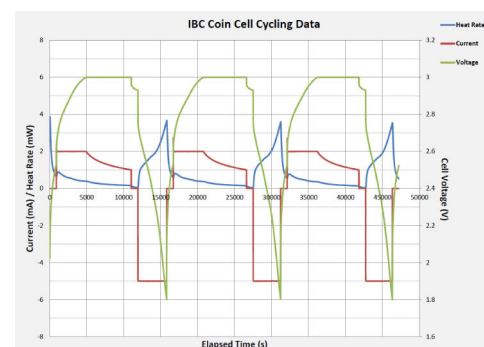
IBC-CC



IBC-CC

Cell format: Coin Cell

Features same as IBC, but with coin cell chamber



Cycling data from ML2032,
rechargeable coin cell, 65mAh capacity

Product Range



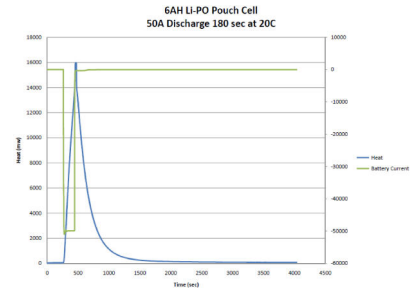
IBC-P



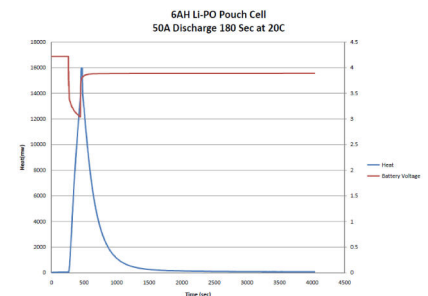
IBC-P

Cell format: Prismatic (small)

- Accommodate battery sizes up to: 100x150mm diameter; depth 20mm
- Heat measurement down to 100mW
- Temperature range, tailored to automotive operating requirements (-5 to 60°C)

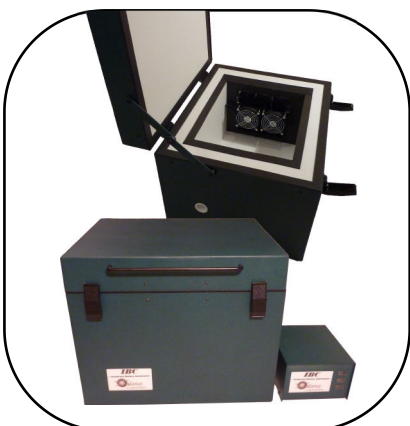


Heat generated along with current data during three minute discharges on a prismatic battery at 20°C.



Heat generated along with voltage data during three minute discharges on a prismatic battery at 20°C.

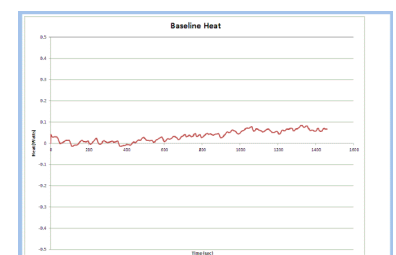
IAC



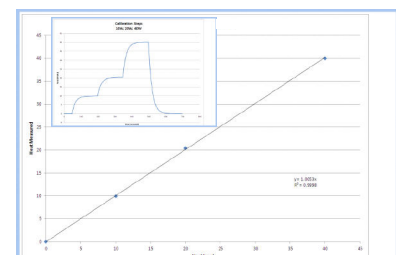
IAC- Isothermal Air Calorimeter

Cell format: Large Sample

- mW sensitivity calorimeter to accommodate complete electronic devices, cells or modules of sizes up to: 275x275mm diameter; depth 175mm
- Custom build option offering larger internal volumes built to customer requirements



Baseline signal over 25min at 25°C.



*Calibration Steps of 10W, 20W, and 40W (insert)
Calibration linearity (main plot)*

Specifications



Calorimeter Type	IBC Cylindrical	IBC-CC Coin Cell	IBC-P Prismatic Small	IAC Power Compensation Calorimeter
Max Temperature (°C)	80	80	60	60
Min Temperature (°C)	-5	-5	-5	-20
Temperature Stability (°C)	0.002	0.001	0.01	0.01
Refrigerated recirculator required	No	No	No	Yes
Calorimeter chamber diameter (mm)	35 (customisable)	25	100 x 150	275 x 275
Calorimeter chamber depth (mm)	70 (customisable)	5	20	175
Number of chambers	1	1	1	1
RMS Noise	100µW	10µW	1mW	100mW
Max heat detection	9W	500mW	10W	50W
Current resolution	Defined by cyclor	Defined by cyclor	Defined by cyclor	N/A
Internal wiring (force)	8 ga (3.3 mm)	16 ga (1.3 mm)	4 ga (5.2 mm)	N/A
Internal wiring (sense)	20 ga (0.8 mm)	20 ga (0.8 mm)	20 ga (0.8 mm)	N/A
Heat capacity measurement capability	Yes	Yes	Yes	No
Heat cut out	Yes	No	Yes	No
N₂ Purge	Yes	Yes	Yes	Yes
External cyclor terminals	Yes	Yes	Yes	No
Footprint (Width x Height x Depth)	10 x 12 x 16 Inch 25 x 30 x 41 cm	10 x 12 x 16 Inch 25 x 30 x 41 cm	10 x 12 x 16 Inch 25 x 30 x 41 cm	24 x 16 x 24 Inch 60 x 40 x 60 cm
Weight	22 lbs 10 kg	22 lbs 10 kg	24 lbs 11 kg	32 lbs 15 kg

specification subject to change

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