

# NanoCycler™ BATTERY CYCLER SYSTEM FOR COIN CELLS

NANOBASE is a market leader in high resolution optical microscopy solutions for scientific and industry applications.

- Extremely cost effective – less than **\$400** per channel.
- Easy of use – directly accepts **2025, 2032 coin cells**.
- Simplicity – directly connects to PC via USB.
- Very compact – fits directly in many constant temperature chambers.

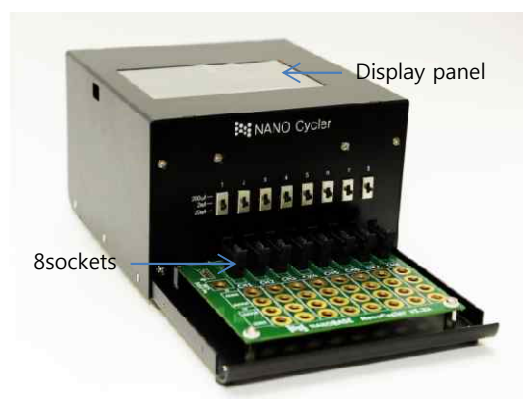
Many advanced battery research starts with coin cells. However, most researchers are forced to use standard battery cyclers designed for testing large cells such as 18650 cells and are not only paying for overpriced battery cyclers but also paying for unused features and accessories such as high current ranges, cables, and coin cell racks. **NanoCycler** is developed for and only for testing coin cells and is priced below \$400 per channel. Researches can now focus on their main research without having to wait for a free battery cycler channel.

## SPECIFICATIONS

<b>ELECTRICITY</b>	<ul style="list-style-type: none"><li>• 88 ~ 264 VAC or 125 ~ 373 VDC</li><li>• 80 W (max)</li></ul>
<b>VOLTAGE</b>	<ul style="list-style-type: none"><li>• Range: 0 ~ 5V</li><li>• Accuracy: <math>\pm 0.1\%</math> FS</li><li>• Measurement resolution: 16 bit</li><li>• Programming resolution: 14 bit</li></ul>
<b>CURRENT*</b>	<ul style="list-style-type: none"><li>• Range: 3 manually selectable ranges 200 <math>\mu</math>A, 2 mA, 20 mA</li><li>• Accuracy: <math>\pm 0.1\%</math> FS</li><li>• Measurement resolution: 16 bit</li><li>• Programming resolution: 14 bit</li></ul>
<b>DATA RECORDING RATE</b>	<ul style="list-style-type: none"><li>• 1 kHz (max)</li><li>• 0.001s ~ 9999s</li></ul>
<b>CHANNELS</b>	<ul style="list-style-type: none"><li>• 8 independent channels per NanoCycler</li><li>• Sockets for 2025, 2032 coin cells.</li><li>• Greater than 80 channels per PC. (limited by PC speed and available USB ports)</li></ul>
<b>S/W</b>	<ul style="list-style-type: none"><li>• Sequence editor<ul style="list-style-type: none"><li>- Step &amp; loop sequence programming</li></ul></li><li>• Channel monitor &amp; control</li><li>• Channel summary</li><li>• General plot</li><li>• Cycle plot</li><li>• Data export to csv files.</li></ul>
<b>DIMENSIONS</b>	<ul style="list-style-type: none"><li>• 153 x 270 x 107 (mm)</li></ul>

\* Custom current range is possible  
i.e. 2 mA, 20 mA, 200 mA

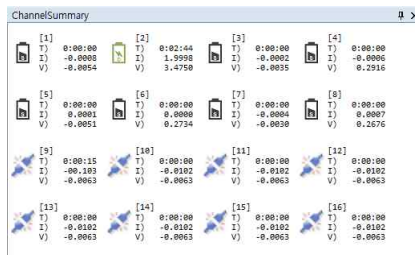
## SYSTEM IMAGE



## CHANNEL CONTROL & MONITOR

Ch #	Label	Contc	Real Time	Status	Cycle #	Step #	T	I (mA)	I Range	V (V)	Ch Q (mAh)	Dch Q (mAh)	Sequence file	Data file
1	Start	✓		STBY	1	3	0:00:00	-0.0005	2 mA	-0.0053	20.28270	0.00000	LI_1C_170uah...	NanoCycler\Data\ch1a...
2	Stop	✓		DISC	38	1	0:04:28	0.0629	2 mA	0.0046	0.00000	0.00082	2200uF_10ms...	NanoCycler\Data\ch2...
3	Stop	✓		CHG	3	2	0:00:14	2.0011	2 mA	2.2271	0.00033	0.00083	2200uF_10ms...	NanoCycler\Data\ch3...
4	Stop	✓		DISC	3	1	0:00:12	0.0809	2 mA	0.0061	0.00000	0.00082	2200uF_10ms...	NanoCycler\Data\ch4...
5	Stop	✓		CHG	2	3	0:00:10	0.1107	2 mA	5.0003	0.00083	0.00082	2200uF_10ms...	NanoCycler\Data\ch5...
6	Start	✓		STBY	10000	5	0:00:00	0.0000	2 mA	0.2677	0.00086	0.00086	2200uF_10ms...	NanoCycler\Data\ch6...
7	Start	✓		STBY	10000	5	0:00:00	-0.0006	2 mA	-0.0050	0.00087	0.00087	2200uF_10ms...	NanoCycler\Data\ch7...
8	Start	✓		STBY	10000	5	0:00:00	0.0007	2 mA	0.2620	0.00088	0.00088	2200uF_10ms...	NanoCycler\Data\ch8...
9	Start	✓		ERR	3	5	0:00:15	-0.0103	20 mA	-0.0063	0.00292	0.00296	2200uF_1ms...	NanoCycler\Data\ch9...

## CHANNEL SUMMARY



- Channel Start/Stop control with password protection
- Displays Cycle #, Step #, Elapsed time, current, voltage, Q, Sequence file, Data file

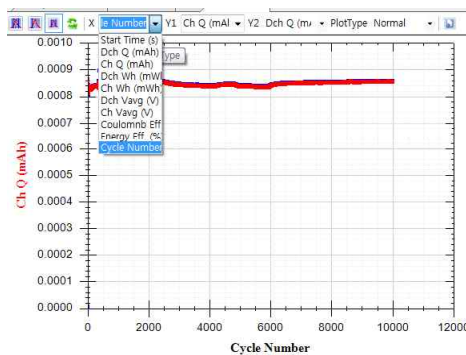
- Displays charge/discharge/standby/error status of all channels as icons.
- Elapsed time, current, voltages are displayed.

## SEQUENCE EDITOR

Type	I	I unit	V (V)	Cut-off type	Cut-off cond	Cut-off Value	Go to Step	Loop Count	Param1
Standby	1	C	2.8	StepTime	GreaterT...	10			
Discharge	1	C	2.8	Voltage	LessThan	2.9			
Charge	1	C	4.2	Current	LessThan	0.05			
Charge	1	C	4.2	StepTime	GreaterT...	1			
Loop				Current	LessThan	0.02	-3	50	

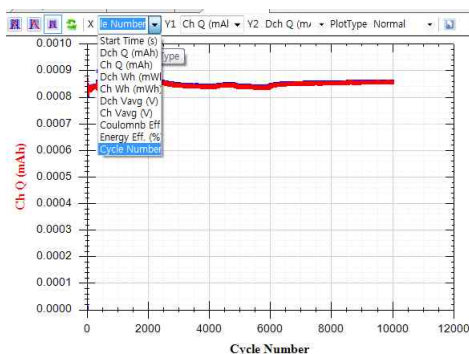
- Step types: Charge, Discharge, Standby, Loop, JumpIf
- Cut-off types: Voltage, Current, Step Time, Cycle Time, Capacity

## CYCLE PLOT



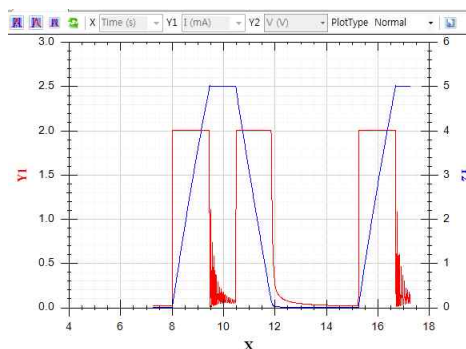
- X and Y-axis: Start time, Dch/Ch Q, Dch/Ch Wh, Dch/Ch Vavg, Coulombn/Energy efficiency, Cycle Number

## GENERAL PLOT



- X and Y-axis: Start time, Dch/Ch Q, Dch/Ch Wh, Dch/Ch Vavg, Coulombn/Energy efficiency, Cycle Number

## REAL-TIME PLOT



- X-axis: time
- Y1-axis: I (mA)
- Y2-axis: V (V)

