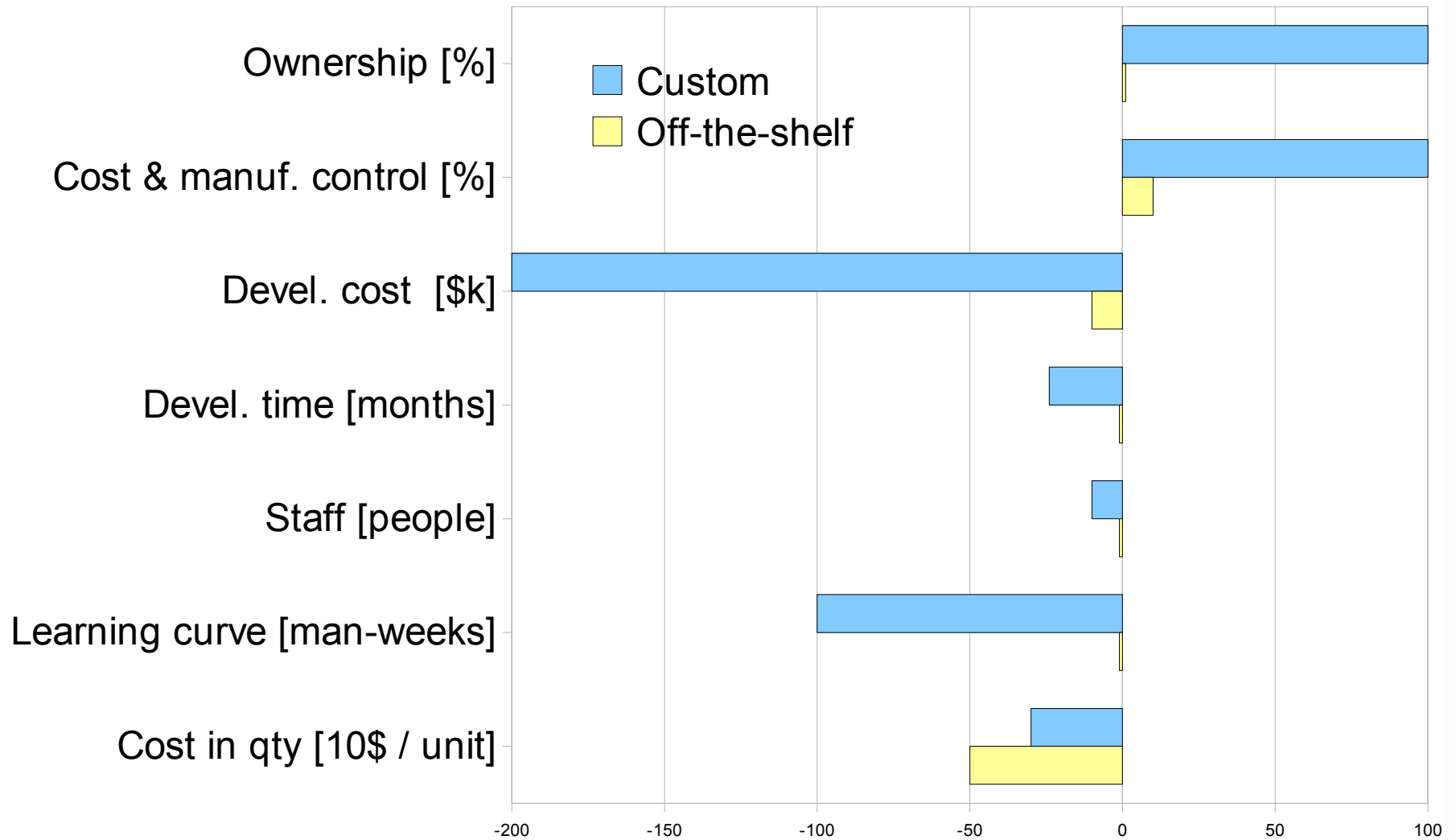


Rapid Development
of
Large Li-Ion Battery Packs
using
Off-the-Shelf
Battery Management Systems

Custom or COTS?

- Custom design
 - you own
 - you control
- Commercial off-the-shelf (COTS)
 - fast
 - easy
 - little development

Custom or COTS?



BMS chips

[Home](#) > [resources](#) > bms_chips_options

BMS chips options

A comparison of commercially available Intersil BMSs for large Li-Ion packs

Elithion	Linear Technology	Analog Devices	Texas Instruments plus multiplexer	OZ	Intersil plus multiplexer
EL01 / EL02	LTC6802-1 / LTC6802-2	AD7280	bq series (BQ77PL900)	OZ	ISL9208 ISL9216/17 ISL94200/201
Large	Any size	Any size	Small packs.	Any size	Any size pack. 8 V to 1.4

- FAQ
- White Papers ▶
- Technology & apps ▶
- Standards
- Available Li-Ion BMSs
- Chips for Li-Ion BMSs
- Available Li-Ion cells
- Available chargers
- Li-Ion related links

Cell selection

- Small cylindrical



- Pouch



- Large cylindrical

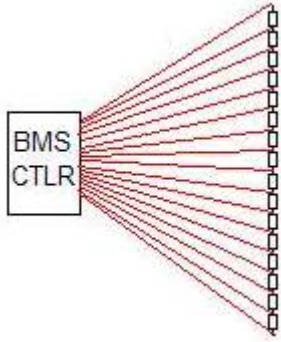


- Prismatic

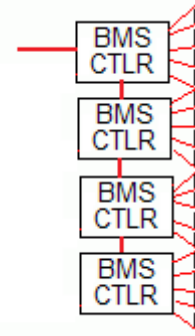


Topology selection

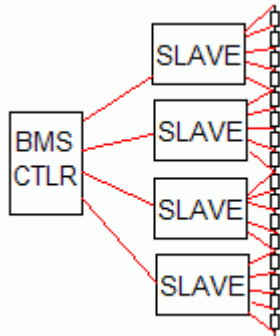
- Centralized



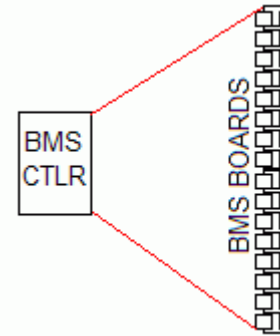
- Modular



- Master-slave



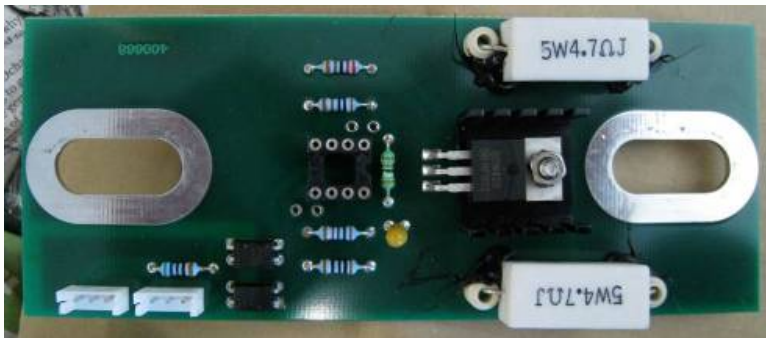
- Distributed



Complexity selection

- Simple

- analog
- go/no go
- dumb
- 2.5~10 \$ / cell (20 cells)



Blade EVs

- Sophisticated

- digital
- detailed reports
- smart
- 10~20 \$ / cell (100 cells)



Genasun

Complexity selection

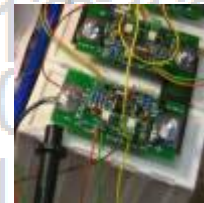
- Simple



- Sophisticated



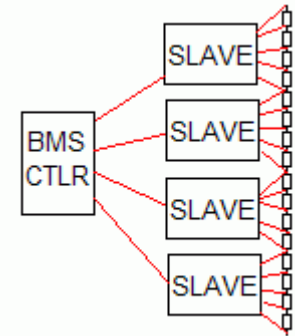
Sophisticated BMSs



AMERICAN EV



Master-slave



0 0 1 0 1 0 1 0 1
0 0 0 0 0 0 0 0 1
0 1 0 1 0 1 0 1

"_ _ _"

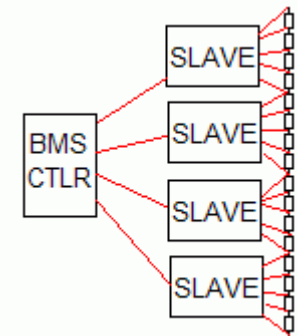
120 cells

BLACK SHEEP



Black Sheep Technology, LLC
BMS Stack_V1

Master-slave



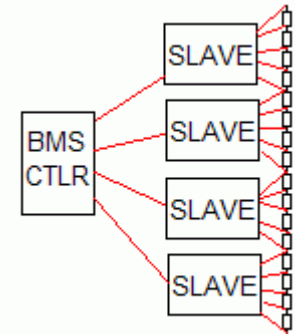
001010101
0000000001
01010101

"Stack V1"
32 cells

BLACK SHEEP



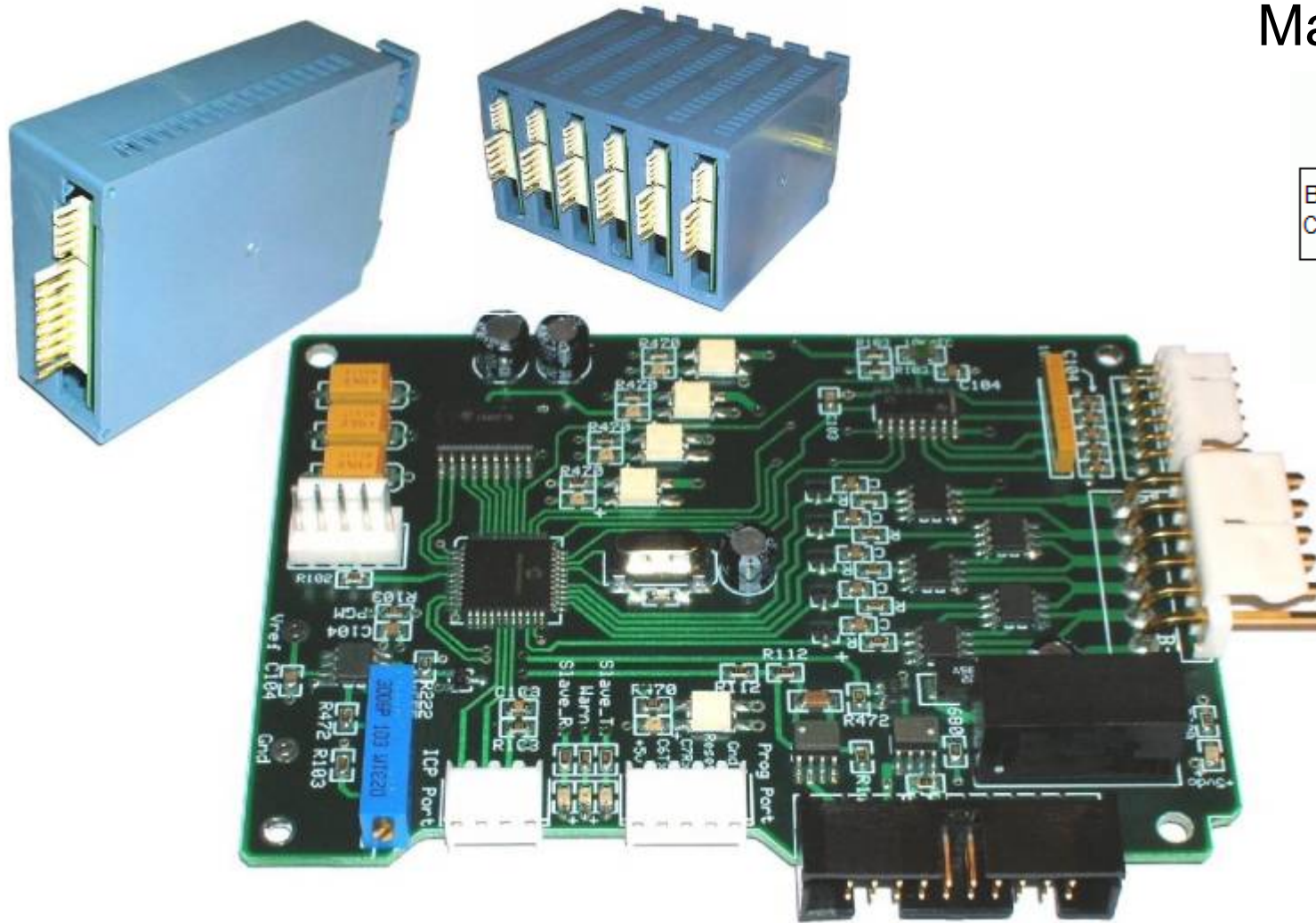
Master-slave



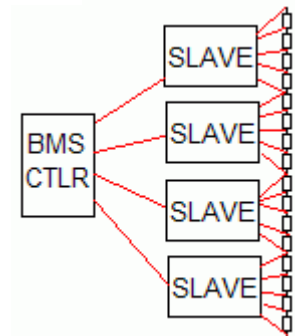
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001010101

"Cage V2"
96 cells

BLACK SHEEP



Master-slave



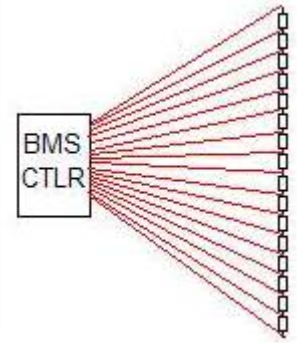
10101
010101
10101

"Mini V3"
unlimited

CONVERT THE FUTURE



Centralized

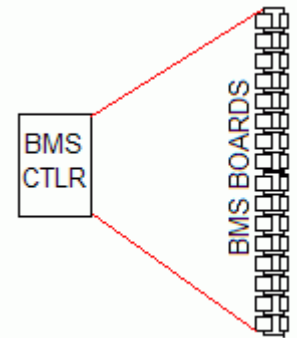
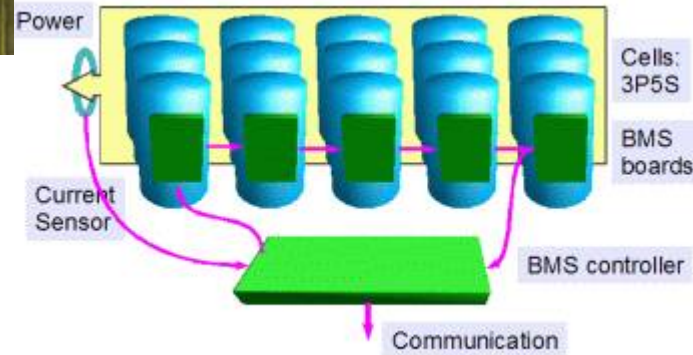
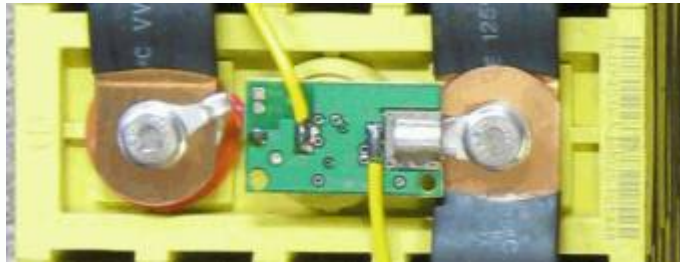


001010101
010101011

"Flex BMS48"
48 cells

ELITHION

Distributed

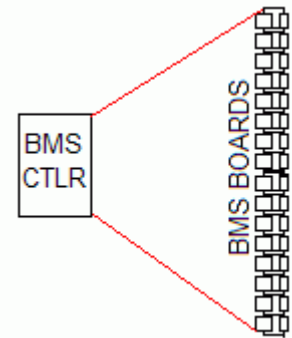


0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1

"Lithiumate"
256 cells



Distributed

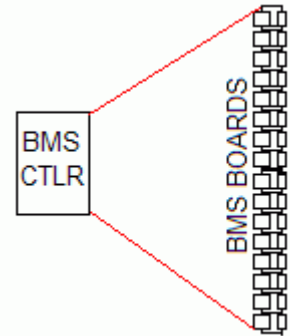
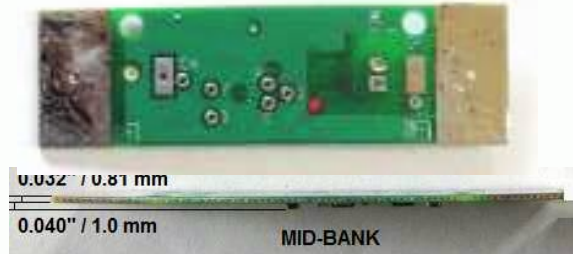


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"Lithiumate"
256 cells

Distributed

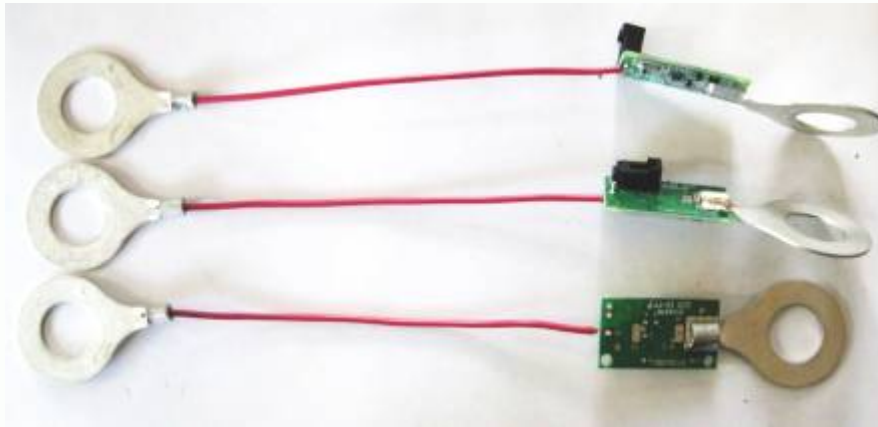
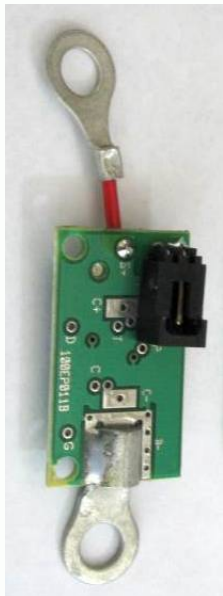


0010101001
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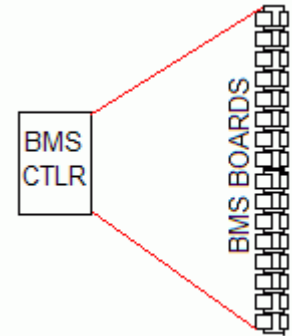


"Lithiumate"
256 cells

ELITHION



Distributed



001010101
010101011

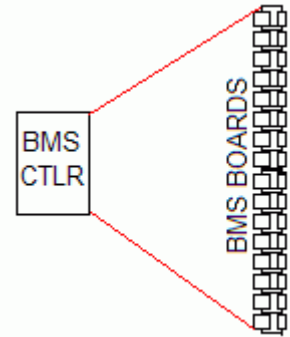


"Lithiumate"
256 cells

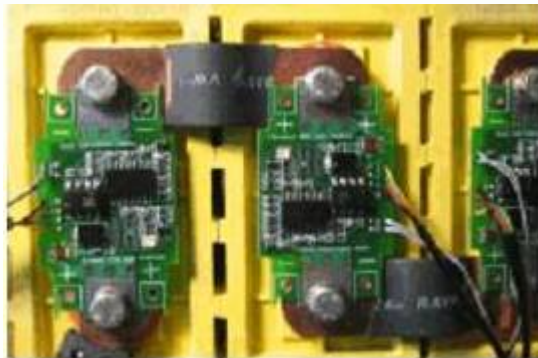
GENASUN



Distributed



0010101001
010101011

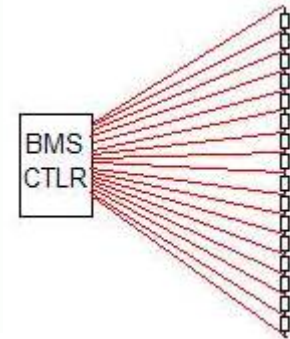


"GLD"
24 cells

LITHIUM BALANCE



Centralized



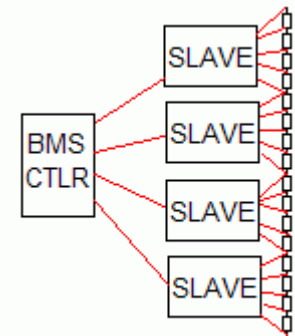
001010101
010101011

"C series"
24 cells

NINGBO YANGMIN



Master-slave

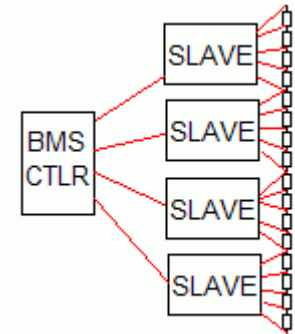


001010101
001010101

"BMS40"
100 cells

KJ HALL

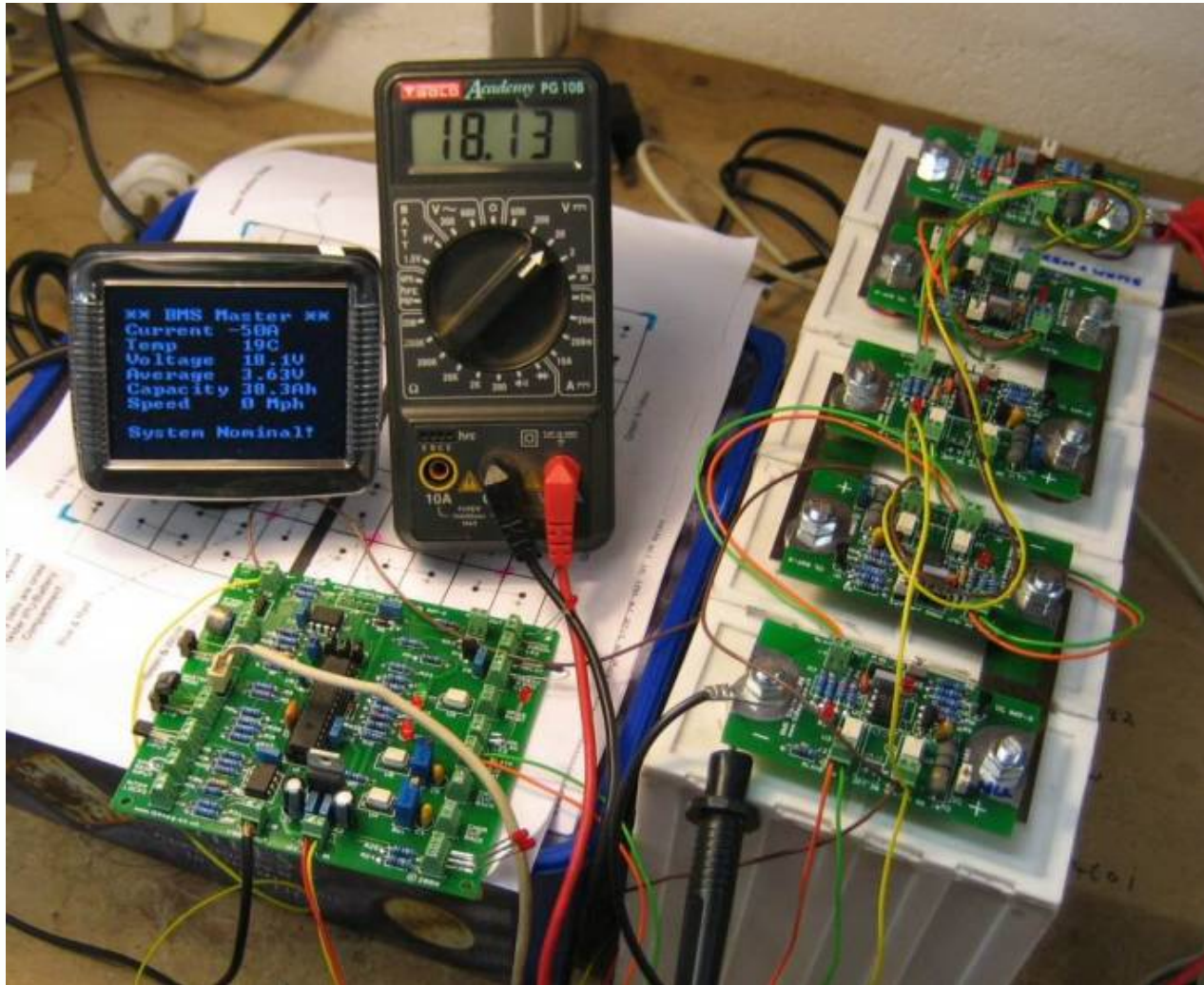
Master-slave



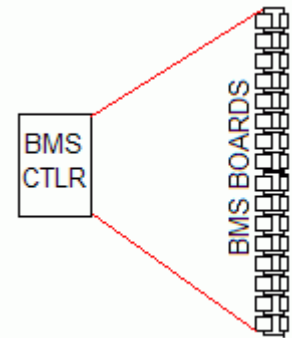
001010101
000101011

"PACKTRAKR"
24 cells

PETER PERKINS



Distributed



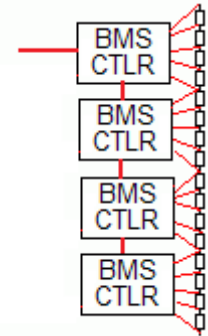
001010101
001010101
001010101

"-"

255 cells

REAP

Modular



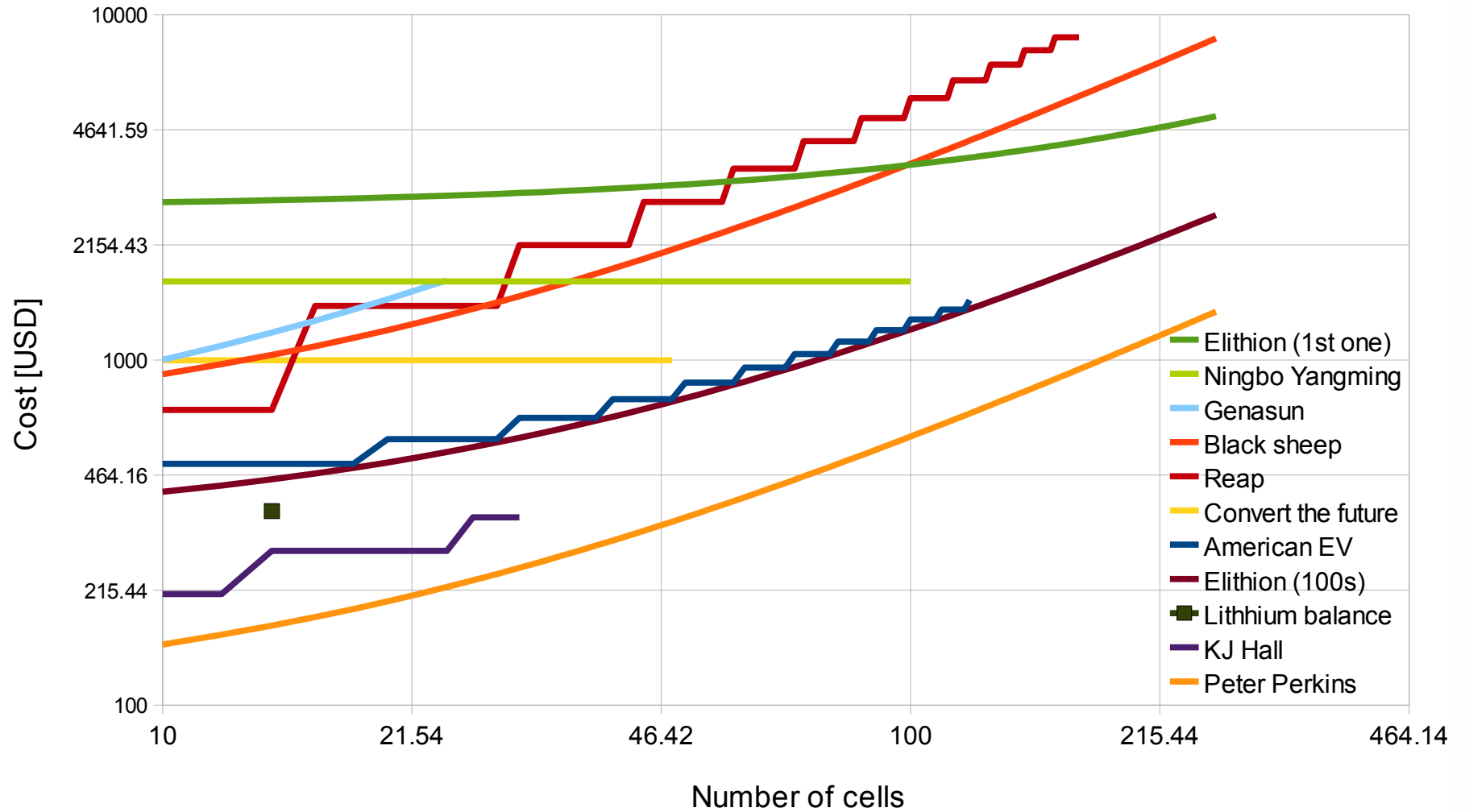
001010101
01010101



"-"

168 cells

PRICES








COMPARISON TABLE

Home Products Services Support Resources About Contact

Home resources bms_options

Li-Ion BMS options

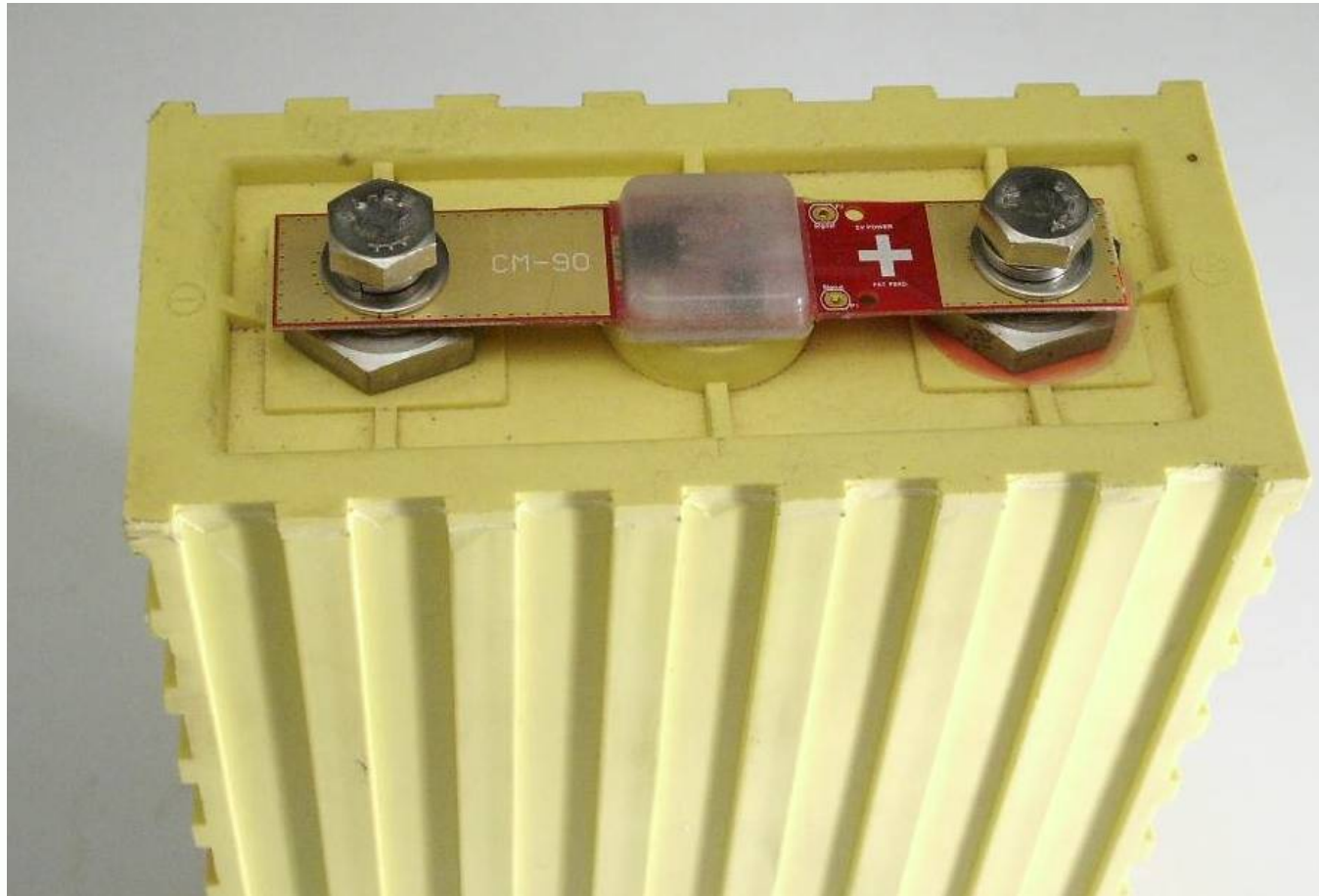
A comparison of commercially available

Company (1)	Location	Picture (2)	MC	Chips for Li-Ion BMSs	Available Li-Ion cells	Available chargers	Li-Ion related links	Cell shape (5)	Balan. (6)	Temper. (7)	Curr. sense (8)	"Fuel gauge" (9)	Comm. (10)	Fan drive (11)	Contac. drive (12)
American Electric Vehicles <small>(no link: site not navigable)</small>	US Colorado							Any	-	-	✓	✓	CAN	-	✓
Black Sheep Technology	US No. Carolina		Stack V1	Master / slave	4~any			Any	✓	✓	✓	✓	Serial	✓	✓
			Cage V2	Master / slave	4~any			Any	✓	✓	✓	✓	Serial	✓	✓
Convert the future	US CA		Flex BMS48	Centralized	48			Any	✓	✓	✓	✓	Internal Bus	✓	-
Elithion Lithiumate™	US Colorado		Lithiumate	Distrib.	1~255			Sml cyl Lrg cyl Prism. Pouch	✓	✓	More info	✓	Wire CAN RS232	✓	✓
Genasun	US Mass.		GLD	Distrib. More info	1~24			64 mm prism. More info	✓	✓	-	-	Wire RS232 More info	-	✓ More info

Simple BMSs



EV Power



Distributed

