

# ALM12V30/60 Lithium Ion Modules

A123Systems' lithium ion rechargeable ALM12V30/60 modules are based on proven ANR26650<sup>m1</sup> cells. The batteries offer very high power, long cycle and calendar life, and have superior abuse tolerance due to the use of patented Nanophosphate™ technology. ALM12V30/60 modules are drop-in replacements for 12V7 lead acid batteries with an integrated on-board cell balancing system that facilitates long battery life.

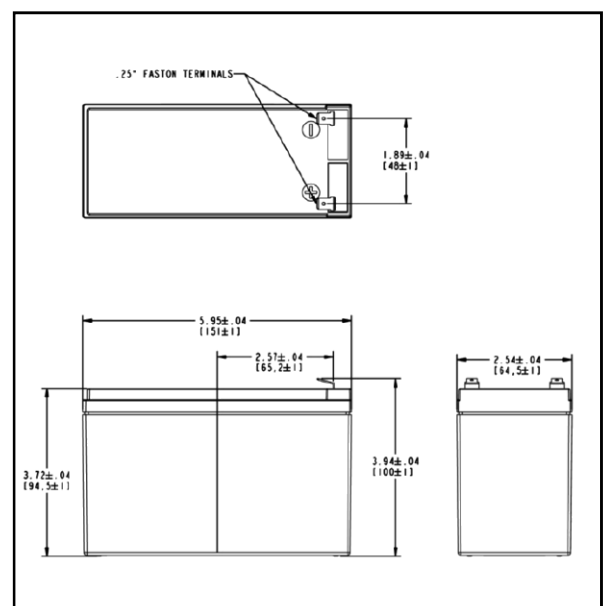
## Key Features and Benefits

- Based on A123Systems' proven ANR26650<sup>m1</sup> cells
- Direct replacement for 12V7 VRLA batteries (same size/charger)
- Power: Delivers several times more power while maintaining high capacity
- Safety: Superior abuse tolerance compared to lead acid and other lithium ion batteries
- Life: Superior float/cycle/calendar life, even at elevated temps and fast discharges
- Weight: Less than 1/4<sup>th</sup> the weight of lead acid batteries
- Maintenance Free: No testing, monitoring or maintenance required
- Two battery sizes available: 30Wh (4-cell), or 60Wh (8-cell)



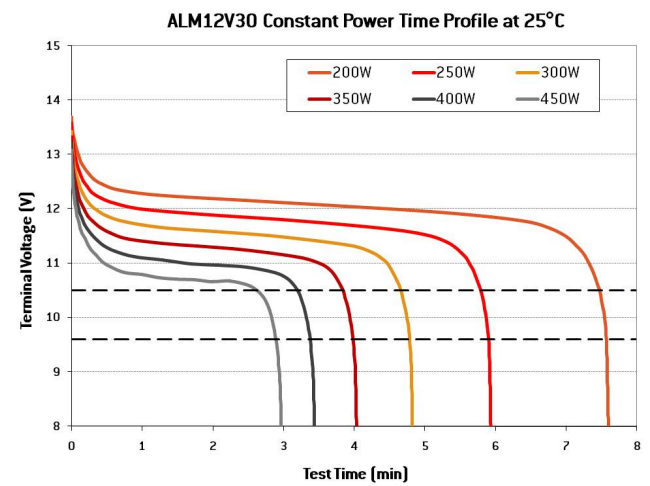
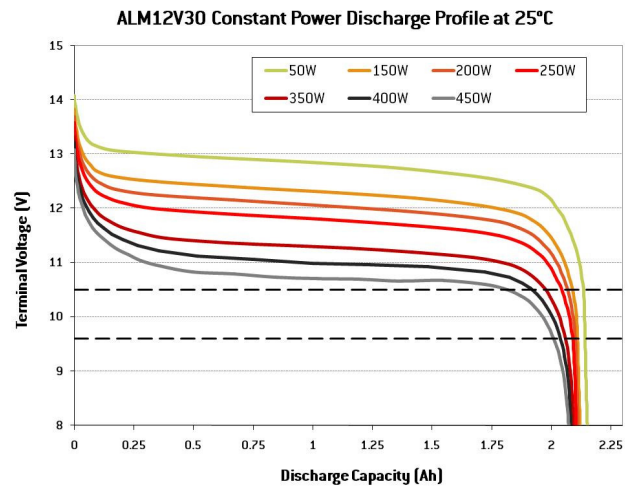
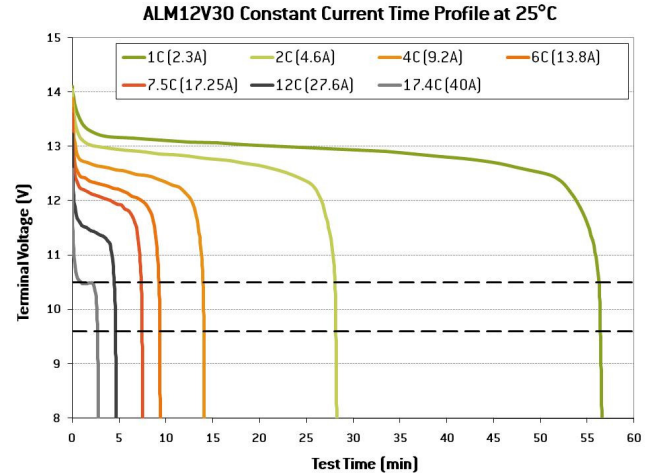
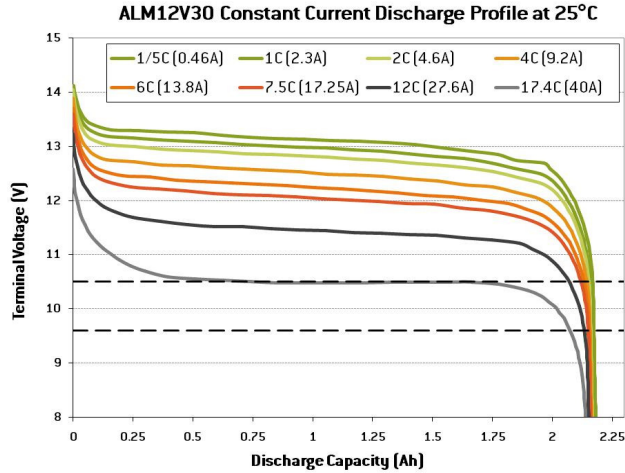
Specifications		
<b>Product Code</b>	ALM12V30	ALM12V60
<b>Nominal Voltage</b>	12V	12V
<b>Nominal Capacity (to specified voltage)</b>		
<b>5 Hour Rate (10.5V)</b>	0.44A/2.18Ah	0.88A/4.36Ah
<b>1 Hour Rate (9.6V)</b>	2.16A/2.16Ah	4.32A/4.32Ah
<b>1/2 Hour Rate (9.6V)</b>	4.30A/2.15Ah	8.60A/4.30Ah
<b>15 Minute Rate (9.6V)</b>	8.60A/2.15Ah	17.20A/4.30Ah
<b>10 Minute Rate (9.6V)</b>	12.90A/2.15Ah	25.80A/4.30Ah
<b>8 Minute Rate (9.6V)</b>	16.00A/2.13Ah	32.00A/4.26Ah
<b>5 Minute Rate (9.6V)</b>	24.90A/2.08Ah	49.60A/4.16Ah
<b>3 Minute Rate (9.6V)</b>	40.00A/2.00Ah	80.00A/4.00Ah
<b>Internal Resistance</b>	40 mOhms	20 mOhms
<b>Max Discharge Current</b>	40A	80A
<b>Max Pulse Discharge Current (&lt;5 sec)</b>	60A	120A
<b>Short Circuit Current</b>	Internal Short Circuit Fuse Protection	Internal Short Circuit Fuse Protection
<b>Self-Discharge</b>	<2% per month	<2% per month
<b>Operating Temp</b>		
<b>Discharge</b>	-22 to 140°F [-30 to 60°C]	-22 to 140°F [-30 to 60°C]
<b>Charge</b>	-22 to 140°F [-30 to 60°C]	-22 to 140°F [-30 to 60°C]
<b>Storage</b>	-58 to 140°F [-50 to 60°C]	-58 to 140°F [-50 to 60°C]
<b>Standard Charging</b>	13.6V to 15.0V	13.6V to 15.0V
<b>Float Charging</b>	13.6V to 14.0V	13.6V to 14.0V
<b>Charge Current</b>	10A max charge	10A max charge

Physical Dimensions		
	ALM12V30	ALM12V60
<b>Length</b>	5.99in/152.0mm	5.99in/152.0mm
<b>Width</b>	2.58in/65.5mm	2.58in/65.5mm
<b>Height (excl. Terms)</b>	3.76in/95.5mm	3.76in/95.5mm
<b>Height (incl. Terms)</b>	3.98in/101.0mm	3.98in/101.0mm
<b>Weight</b>	1.3lb (0.59kg)	2.1lb (0.95kg)
<b>Terminal</b>	Amp FASTON 250	Amp FASTON 250
<b>Case Material</b>	ABS	ABS



# ALM12V30/60 Lithium Ion Modules

A123Systems' lithium ion rechargeable ALM12V30/60 modules are based on proven ANR26650<sup>m1</sup> cells. The batteries offer very high power, long cycle and calendar life, and have superior abuse tolerance due to the use of patented Nanophosphate™ technology. ALM12V30/60 modules are drop-in replacements for 12V7 lead acid batteries with an integrated on-board cell balancing system that facilitates long battery life.



Constant Current Discharge Chart (Amperes, 25°C)								
Module	End Voltage/Time	3 Min	5 Min	8 Min	10 Min	15 Min	30 Min	60 Min
ALM12V30	9.6V	40.0	24.9	16.0	12.9	8.6	4.3	2.2
ALM12V30	10.5V	24.0	24.7	15.8	12.8	8.5	4.3	2.2
ALM12V60	9.6V	80.0	49.8	32.0	25.8	17.2	8.6	4.3
ALM12V60	10.5V	48.0	49.4	31.6	25.6	17.0	8.6	4.3
Constant Power Discharge Chart (Watts, 25°C)								
Module	End Voltage/Time	3 Min	5 Min	8 Min	10 Min	15 Min	30 Min	60 Min
ALM12V30	9.6V	450	280	180	148	101	52	26
ALM12V30	10.5V	425	270	175	145	100	51	26
ALM12V60	9.6V	900	560	360	296	202	104	52
ALM12V60	10.5V	850	540	350	290	200	102	52