

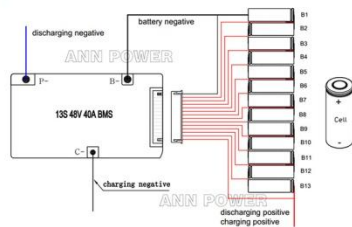
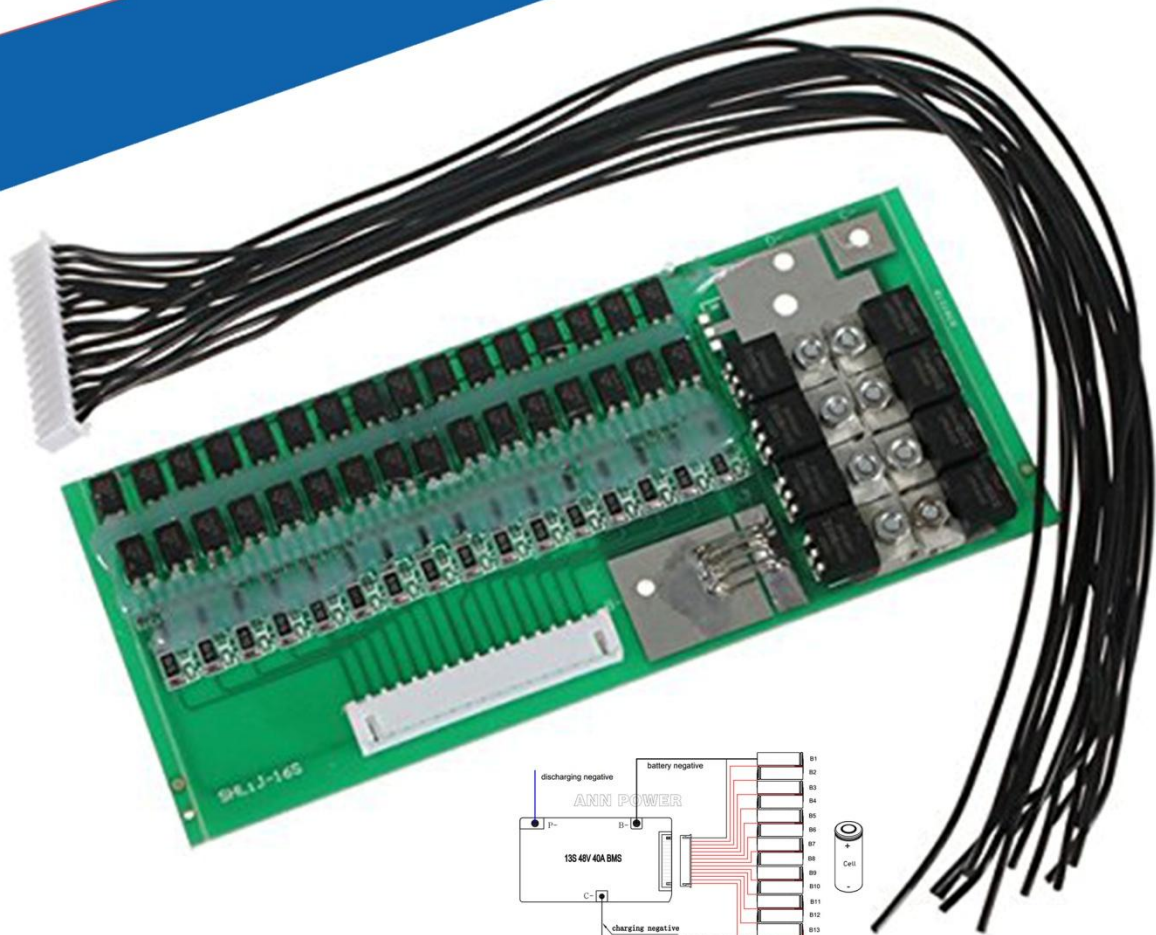
# TECH IMPERIAL

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## BATTERY MANAGEMENT SYSTEM

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<b>PCM Specifications For 59.2V (16S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-16S150A</b>			
<b>No.</b>	<b>Item</b>	<b>Test</b>	<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:67.2V 3.7/Cell
		Balance voltage for single cell	4.2V±0.025V
2.	Current	Balance current for single cell	42mA±5mA
		Current Consumption	≤25uA
		Maximal continuous charging current	150A
		Maximal continuous discharging current	150A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V±0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05±0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V±0.0625V
		Over discharge detection delay time	100-1800mS
		Over discharge release voltage for single cell	3.00±0.075V
5.	Over current protection	Over current detection voltage	100±25mv
		Over current detection current	350±50A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	≤60mΩ
8.	Temperature	Protection Temperature	75°C±5°C
		Temperature Release	50.5°C ± 12.5°C
		Operating Temperature Range	-40~+85°C
		Storage Temperature Range	-40~+125°C

<b>PCM Specifications For 59.2V (16S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-16S120A</b>			
<b>No.</b>	<b>Test Item</b>		<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:67.2V 3.7/Cell
		Balance voltage for single cell	4.2V±0.025V
2.	Current	Balance current for single cell	42mA±5mA
		Current Consumption	≤25uA
		Maximal continuous charging current	120A
		Maximal continuous discharging current	120A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V±0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05±0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V±0.0625V
		Over discharge detection delay time	100-1800mS
		Over discharge release voltage for single cell	3.00±0.075V
5.	Over current protection	Over current detection voltage	100±25mv
		Over current detection current	350±50A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	≤60mΩ
8.	Temperature	Protection Temperature	75°C±5°C
		Temperature Release	50.5°C ± 12.5°C
		Operating Temperature Range	-40~+85°C
		Storage Temperature Range	-40~+125°C

<b>PCM Specifications For 59.2V (16S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-16S100A</b>			
<b>No.</b>	<b>Test Item</b>		<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:67.2V 3.7/Cell
		Balance voltage for single cell	4.2V±0.025V
2.	Current	Balance current for single cell	42mA±5mA
		Current Consumption	≤25uA
		Maximal continuous charging current	100A
		Maximal continuous discharging current	100A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V±0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05±0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V±0.0625V
		Over discharge detection delay time	100-1800mS
		Over discharge release voltage for single cell	3.00±0.075V
5.	Over current protection	Over current detection voltage	100±25mv
		Over current detection current	350±50A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	≤60mΩ
8.	Temperature	Protection Temperature	75°C±5°C
		Temperature Release	50.5°C ± 12.5°C
		Operating Temperature Range	-40~+85°C
		Storage Temperature Range	-40~+125°C

<b>PCM Specifications For 48.1V (13S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-13S 150A</b>			
<b>No.</b>		<b>Test Item</b>	<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:54.6V CC/CV
		Balance voltage for single cell	4.2V $\pm$ 0.025V
2.	Current	Balance current for single cell	42mA $\pm$ 5mA
		Current Consumption	$\leq$ 25uA
		Maximal continuous charging current	150A
		Maximal continuous discharging current	150A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V $\pm$ 0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05 $\pm$ 0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V $\pm$ 0.0625V
		Over discharge detection delay time	1000-1800mS
		Over discharge release voltage for single cell	3.00 $\pm$ 0.075V
5.	Over current protection	Over current detection voltage	200 $\pm$ 25mv
		Over current detection current	350 $\pm$ 20A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	$\leq$ 20m $\Omega$
8.	Temperature	Protection Temperature	75 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C
		Operating Temperature Range	-40~+85 $^{\circ}$ C
		Storage Temperature Range	-40~+125 $^{\circ}$ C

<b>PCM Specifications For 48.1V (13S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-13S 100A</b>			
<b>No.</b>		<b>Test Item</b>	<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:54.6V CC/CV
		Balance voltage for single cell	4.2V±0.025V
2.	Current	Balance current for single cell	42mA±5mA
		Current Consumption	≤25uA
		Maximal continuous charging current	100A
		Maximal continuous discharging current	100A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V±0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05±0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V±0.0625V
		Over discharge detection delay time	1000-1800mS
		Over discharge release voltage for single cell	3.00±0.075V
5.	Over current protection	Over current detection voltage	200±25mv
		Over current detection current	350±20A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	≤20mΩ
8.	Temperature	Protection Temperature	75°C±5°C
		Operating Temperature Range	-40~+85°C
		Storage Temperature Range	-40~+125°C

<b>PCM Specifications For 48.1V (13S) LiFePo4 Battery Packs</b>			
<b>Model: LWS-13S 40A</b>			
<b>No.</b>	<b>Test Item</b>		<b>Criterion</b>
1.	Voltage	Charging Voltage for single cell	DC:54.6V CC/CV
		Balance voltage for single cell	4.2V $\pm$ 0.025V
2.	Current	Balance current for single cell	42mA $\pm$ 5mA
		Current Consumption	$\leq$ 25uA
		Maximal continuous charging current	40A
		Maximal continuous discharging current	40A
3.	Over charge protection	Over charge detection voltage for single cell	4.25V $\pm$ 0.025V
		Over charge detection delay time	800-1300mS
		Over charge release voltage for single cell	4.05 $\pm$ 0.05V
4.	Over Discharge protection	Over discharge detection voltage for single cell	2.50V $\pm$ 0.0625V
		Over discharge detection delay time	1000-1800mS
		Over discharge release voltage for single cell	3.00 $\pm$ 0.075V
5.	Over current protection	Over current detection voltage	200 $\pm$ 25mv
		Over current detection current	350 $\pm$ 20A
		Detection delay time	800-1300mS
		Release condition	Cut Load
6.	Short Protection	Detection Condition	Exterior short circuit
		Detection delay time	50-200us
		Release condition	Cut load
7.	Resistance	Protection Circuitry (MOSFET)	$\leq$ 20m $\Omega$
8.	Temperature	Protection Temperature	75 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C
		Operating Temperature Range	-40~+85 $^{\circ}$ C
		Storage Temperature Range	-40~+125 $^{\circ}$ C