



# Certificate of Compliance

**Certificate:** 80146248

**Master Contract:** 602980

**Project:** 80146248

**Date Issued:** 2023-02-07

**Issued To:** Lithion Battery Inc.  
1350 Wigwam Parkway  
Henderson, Nevada 89074  
United States  
Attention: Stewart Graham

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.*

Issued by: *Iris Gao*



## **PRODUCTS**

CLASS - C370112 - BATTERY SYSTEM for use in Stationary Applications

CLASS - C370182 - BATTERY SYSTEM for use in Stationary Applications - Certified to US Standards

Battery Pack System for use in Stationary Electrical Energy Storage Application, Lithium-ion, Stack'd LV Series, the detailed Model name and Electrical Ratings are noted as below:



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Electrical Ratings for Battery System:

Battery System Model	Battery System Ratings				Battery Module	Master control Model
	Normal Voltage Vdc	Normal Capacity Ah/kWh	Battery Module Configuration	Enclosure IP Rating		
PF6-LFP40960-2A01	51.2	800Ah/ 40.96kWh	8P1S	IP55	HG-FS48100-16OSJ1	HG-MC100-200M2
PF6-LFP35840-2A01		700Ah/ 35.84kWh	7P1S			
PF6-LFP30720-2A01		600Ah/ 30.72kWh	6P1S			
PF6-LFP25600-2A01		500Ah/ 25.6kWh	5P1S			
PF6-LFP20480-2A01		400Ah/ 20.48kWh	4P1S			
PF6-LFP15360-2A01		300Ah/ 15.36kWh	3P1S			
PF6-LFP10240-2A01		200Ah/ 10.24kWh	2P1S			
PF6-LFP05120-2A01		100Ah/ 5.12kWh	1P1S			
PF5-LFP38400-2A01	48	800Ah/ 38.4kWh	8P1S		HG-FS48100-15OSJ1	
PF5-LFP33600-2A01		700Ah/ 33.6kWh	7P1S			
PF5-LFP28800-2A01		600Ah/ 28.8kWh	6P1S			
PF5-LFP24000-2A01		500Ah/ 24kWh	5P1S			
PF5-LFP19200-2A01		400Ah/ 19.2kWh	4P1S			
PF5-LFP14400-2A01		300Ah/ 14.4kWh	3P1S			
PF5-LFP09600-2A01		200Ah/ 9.6kWh	2P1S			
PF5-LFP04800-2A01		100Ah/ 4.8kWh	1P1S			



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Note\*: Battery system PF6-LFPXXXXX-2A01 series consists of 1-8 modules HG-FS48100-16OSJ1, which are in parallel connected with Master control Model HG-MC100-200M2.

Battery system PF5-LFPXXXXX-2A01 series consists of 1-8 modules HG-FS48100-15OSJ1, which are in parallel connected with Master control Model HG-MC100-200M2.

Module HG-FS48100-16OSJ1, consists of 16pcs cells connected in series configuration.

Module HG-FS48100-15OSJ1, consists of 15pcs cells connected in series configuration.

**Manufacturer's Specified Charging Parameters for Battery System:**

Battery System Model	Temperature Range, °C **	Normal Charging Voltage, Vdc	Normal Charging Current, A	Maximum Charging Voltage, Vdc	Maximum Charging Current, A
PF6-LFP40960-2A01 PF6-LFP35840-2A01 PF6-LFP30720-2A01 PF6-LFP25600-2A01 PF6-LFP20480-2A01	0-55/ (-20-55)	56.8	0.2C	59.2	-20°C~15°C@0.2C 15°C~50°C@300A 50°C~55°C@0.2C
PF6-LFP15360-2A01 PF6-LFP10240-2A01 PF6-LFP05120-2A01	0-55/ (-20-55)	56.8	0.2C	59.2	-20°C~15°C@0.2C 15°C~50°C@1C 50°C~55°C@0.2C
PF5-LFP38400-2A01 PF5-LFP33600-2A01 PF5-LFP28800-2A01 PF5-LFP24000-2A01 PF5-LFP19200-2A01	0-55/ (-20-55)	53.25	0.2C	55.5	-20°C~15°C@0.2C 15°C~50°C@300A 50°C~55°C@0.2C
PF5-LFP14400-2A01 PF5-LFP09600-2A01 PF5-LFP04800-2A01	0-55/ (-20-55)	53.25	0.2C	55.5	-20°C~15°C@0.2C 15°C~50°C@1C 50°C~55°C@0.2C

**Manufacturer's Specified Discharging Parameters for Battery System:**

Battery System Model	Temperature Range, °C	Normal Discharging Current, A	End-of-discharge voltage, Vdc	Maximum Discharging Current, A
PF6-LFP40960-2A01 PF6-LFP35840-2A01 PF6-LFP30720-2A01 PF6-LFP25600-2A01 PF6-LFP20480-2A01	-20-55	0.2C	43.2	-20°C~15°C@0.2C 15°C~50°C@300A 50°C~55°C@0.2C



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PF6-LFP15360-2A01 PF6-LFP10240-2A01 PF6-LFP05120-2A01	-20-55	0.2C	43.2	-20°C~15°C@0.2C 15°C~50°C@1C 50°C~55°C@0.2C
PF5-LFP38400-2A01 PF5-LFP33600-2A01 PF5-LFP28800-2A01 PF5-LFP24000-2A01 PF5-LFP19200-2A01	-20-55	0.2C	40.5	-20°C~15°C@0.2C 15°C~50°C@300A 50°C~55°C@0.2C
PF5-LFP14400-2A01 PF5-LFP09600-2A01 PF5-LFP04800-2A01	-20-55	0.2C	40.5	-20°C~15°C@0.2C 15°C~50°C@1C 50°C~55°C@0.2C

**\*\*:** The Battery module has two configurations, first configuration without heating films, and the second configuration has heating films.

The first battery modules without heating films only be charged with the environment temperature range of 0~55°C. The second battery modules which have heating films will be charged in the range of environment temperature from -20~55°C. And the heating films will start work to heating the battery modules when the cells' temperature in battery module below 2°C and stop work when the temperature above 15°C.

**Conditions of Acceptability:**

1. The battery pack including its battery management system has been tested according to the functional-safety requirements of ANSI/CAN/UL-1973:2018, Second Edition. Solid state circuits and software controls relied upon as the primary safety protection, have been evaluated to the Standard for Safety: Automatic Electrical Controls – Part 1, CSA/UL 60730-1. Any change to the software and electronic controls of the BMS may require additional testing.
2. The enclosure was evaluated to establish an IP rating of IP55 with the Standard for Degrees of Protection Provided by Enclosure (IP Code) IEC 60529.
3. Product shall avoid being used near marine environments.
4. Further evaluation for Resistance of Moisture and/or Salt Fog shall be required for the battery pack intended to be used in the end product where moisture and/or salt fog condition were applied.
5. Manual disconnect device shall be required during the installation of the end products.
6. Corrosion due to electrochemical action is to be determined for conductive parts in contact with terminals when subjecting to the installation of the end products.
7. Equipment Application Location: Stationary
8. Access Location: Operator Accessible.
9. The installation was not evaluated. The battery system shall be installed in accordance with NFPA 70 or other applicable installation code.
10. Dielectric Voltage Withstand Test was performed with the test potential of 1000Vac/1414 Vdc, a higher test potential shall be considered in the end product if higher overvoltage category specified.
11. Overvoltage Category(OVC): 2



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- 12. Pollution Degree (PD): 2
- 13. Altitude for Operation: Up to 2000 m.

Battery Module for use in Stationary Electrical Energy Storage Application, Lithium-ion battery module, Compact Series, the detailed Model name and Electrical Ratings are noted as below:

**Electrical Ratings:**

Battery Module Model	Normal Voltage Vdc	Normal Capacity Ah/kWh	Battery Module Configuration	Enclosure IP Rating
CP1-LFP05120-1A01	51.2	100Ah/5.12kWh	16S1P	IP20

**Manufacturer’s Specified Charging Parameters for Battery Module:**

Battery Module Model	Temperature Range, °C	Normal Charging Voltage, Vdc	Normal Charging Current, A	Maximum Charging Voltage, Vdc	Maximum Charging Current, A
CP1-LFP05120-1A01	0-50	56.8	20	57	20 (0~15 °C); 100 (15~50 °C)

**Manufacturer’s Specified Discharging Parameters for Battery Module:**

Battery Module Model	Temperature Range, °C	Normal Discharging Current, A	End-of-discharge voltage, Vdc	Maximum Discharging Current, A
CP1-LFP05120-1A01	-15-50	20	46.88	20 (-15~15 °C); 100 (15~50 °C)

**Conditions of Acceptability:**

- 14. The master control box model HG-MC100-200E, which was evaluated with Stack'd LV Series, The master control box is only used for test purpose, if battery module CP1-LFP05120-1A01 used with other products, additional evaluation will be needed.
- 15. The battery module including its battery management system has been tested according to the safety requirements of ANSI/CAN/UL-1973:2018, Second Edition. Solid state circuits and software controls relied upon as the primary safety protection, have been evaluated to the Standard for Safety: Automatic Electrical Controls – Part 1, CSA/UL 60730-1. Any change to the software and electronic controls of the BMS may require additional testing.
- 16. The enclosure was evaluated only to establish an IP rating of IP20 with the Standard for Degrees of Protection Provided by Enclosure (IP Code) IEC 60529.
- 17. Product is evaluated for indoor use and shall avoid being used in moisture environment, and not being used near marine environments.

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18. Further evaluation for Resistance of Moisture and/or Salt Fog shall be required for the battery module intended to be used in the end product where moisture and/or salt fog condition were applied.
19. Manual disconnect device shall be required during the installation of the end products.
20. Corrosion due to electrochemical action is to be determined for conductive parts in contact with terminals when subjecting to the installation of the end products.
21. Equipment Application Location: Stationary
22. Access Location: Operator Accessible.
23. The installation was not evaluated. The battery system shall be installed in accordance with NFPA 70 or other applicable installation code.
24. Dielectric Voltage Withstand Test was performed with the test potential of 1000Vac/1414Vdc, a higher test potential shall be considered in the end product if higher overvoltage category specified.
25. Overvoltage Category(OVC): 2
26. Pollution Degree(PD): 2
27. Altitude for Operation: Up to 2000 m.

### **APPLICABLE REQUIREMENTS**

ANSI/CAN/UL-1973:2018, Second Edition - Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications.

### **MARKINGS**

Each unit shall bear all the required markings identified in the applicable certification report(s).

### **Notes:**

Products certified under Class C370112, C370182 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). [www.scc.ca](http://www.scc.ca)





## Supplement to Certificate of Compliance

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*The products listed, including the latest revision described below,  
are eligible to be marked in accordance with the referenced Certificate.*

### Product Certification History

Project	Date	Description
80146248	November 07, 2023	Multiple Listing for Lithion Battery Inc. Base Manufacturer: Zhongrui Green Energy Technology (Shenzhen) Co.,Ltd (Master Contract: 301721)

See below table for the model name of the Submitter and Listee:

Original Report	Base Model No.	Listee Model No.
80104273	ZR-PBML-5S	PF6-LFP05120-2A01
	ZR-PBML-10S	PF6-LFP10240-2A01
	ZR-PBML-15S	PF6-LFP15360-2A01
	ZR-PBML-20S	PF6-LFP20480-2A01
	ZR-PBML-25S	PF6-LFP25600-2A01
	ZR-PBML-30S	PF6-LFP30720-2A01
	ZR-PBML-35S	PF6-LFP35840-2A01
	ZR-PBML-40S	PF6-LFP40960-2A01
	ZR-PBML-5SE	PF5-LFP04800-2A01
	ZR-PBML-10SE	PF5-LFP09600-2A01
	ZR-PBML-15SE	PF5-LFP14400-2A01
	ZR-PBML-20SE	PF5-LFP19200-2A01
	ZR-PBML-25SE	PF5-LFP24000-2A01
	ZR-PBML-30SE	PF5-LFP28800-2A01
	ZR-PBML-35SE	PF5-LFP33600-2A01
	ZR-PBML-40SE	PF5-LFP38400-2A01
	ZR-MC100-200M2	HG-MC100-200M2
	ZR-FS48100-16OSJ1	HG-FS48100-16OSJ1
	ZR-FS48100-15OSJ1	HG-FS48100-15OSJ1
80104276	ZR-PBX1	CP1-LFP05120-1A01