User Manual

LSUM 016R8L 0058F EA

LS Materials

LS Mtron Hi-tech center, 39, 116beon-gil, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14118, Korea
Email : sp.jeong@lsmaterials.co.kr LS Materials Co., Ltd.

LS ULTRACAPACITOR LSUCF

History

Version	Date	Change Description	Author
V0	07 . Nov . 2016	First version	SW Son
V1	26 . Nov . 2021	New format	SH Kim

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1. Overview

The LS 16.8V / 58F Ultracapacitor Module has high energy and low ESR to meet energy storage and power delivery requirements.

The cells used in the module have 2.8 V maximum voltage rating and are connected in series to get higher operating voltage of modules. To meet the long cycle life requirements, the cells operate under 2.8V. In addition, all the cells are balanced by balancing circuit connected parallel to each cell.

2. Identification of features

<Fig. 1> Product Image

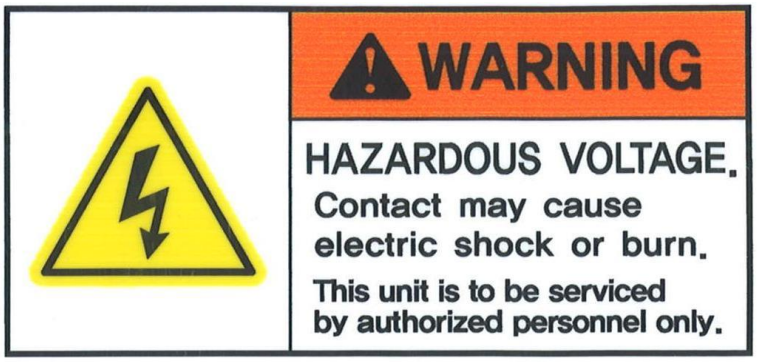
3. Unpacking

Inspect the shipping carton for signs of damage prior to unpacking the module. Damage to the shipping carton or module should be reported to the carrier immediately.

Remove the module from the shipping carton and retain the shipping materials until the unit has been inspected and is determined to be operational.

NOTE: The original shipping materials are approved for both air and ground shipment. The module should be removed from the shipping carton by lifting the body of the module.

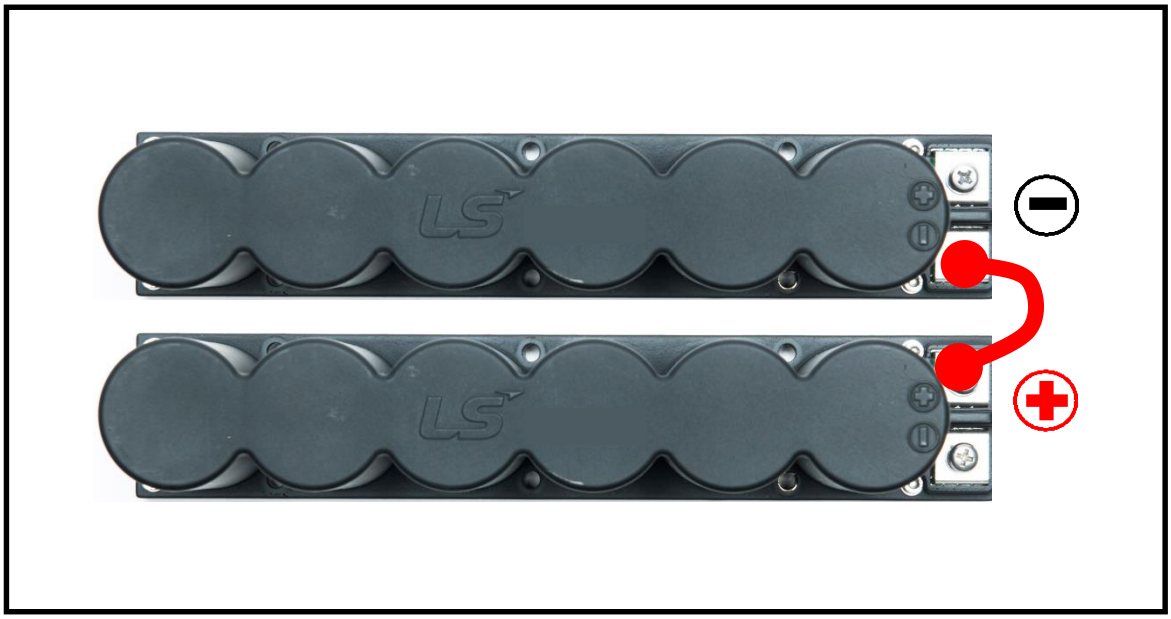
4. Safety



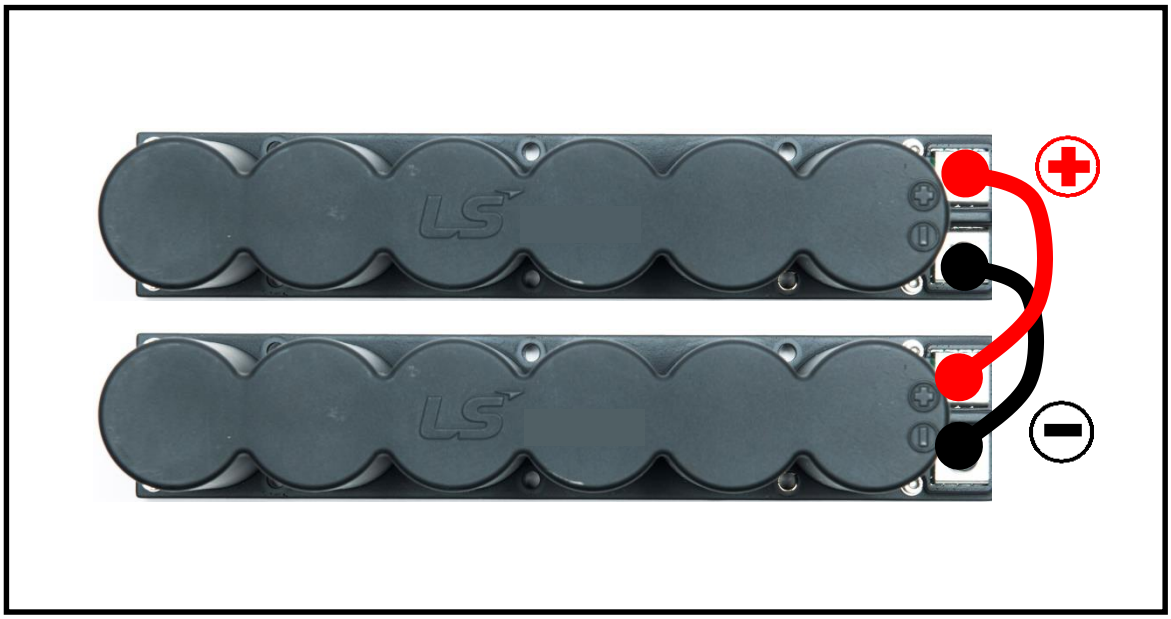
- Do not operate above specified voltage.
- Do not operate above specified temperature rating.
- Do not touch terminals with conductors while charged. Serious burns, shock, or material fusing may occur.
- Protect surrounding electrical components from incidental contact.
- Provide sufficient electrical isolation when working above rated voltage.
- Prior to installation and removal from the equipment, it is mandatory to fully discharge the module.

5. Module to module connection

- There are series and parallel connection for High power



<Fig. 2> Series Connection of Modules



<Fig. 3> Parallel Connection of Modules.

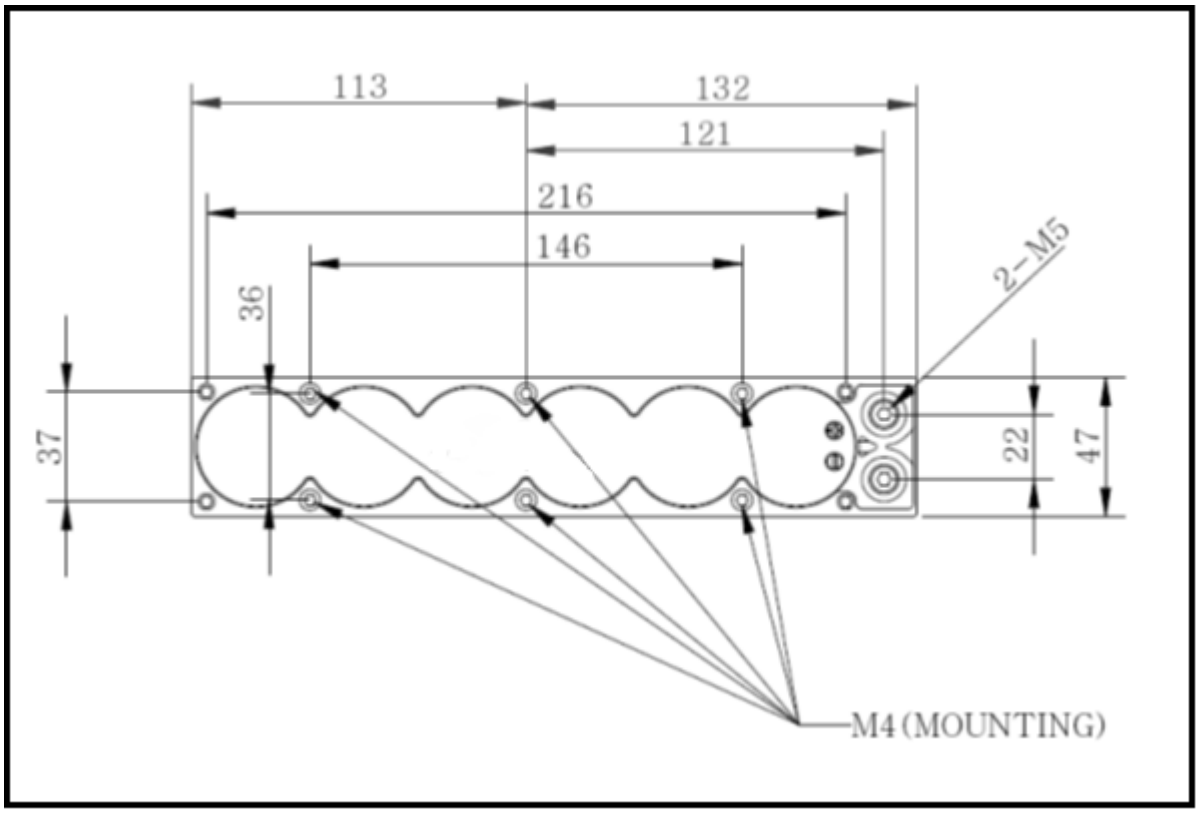
6. Output terminal connection

The LS 16.8V / 58F Ultracapacitor Modules are designed to connect directly to a ring terminal. The positive and negative terminals have each hole for the screw. Two terminals threaded size are M5.

When tightening the terminal bolt, a torque of 4 N-m for the M5 bolt should be used. Because the modules have a very low ESR, total ESR will be affected by a ring lug, bus bar or torque. Therefore, it needs more attention to assemble the modules. And appropriate protection and sealing should be used on both module terminals to avoid shock hazards and corrosion.

7. Mounting

The modules should not be mounted in locations where they are directly exposed to the environment.



<Fig. 4> Mounting Positions

8. Maintenance

Power Rating

If the applied voltage is over rated voltage, charging the module should be stopped. And the allowable low voltage level of the module depends on the user's requirements, but full discharging to 0V does not affect the module performance.

Temperature

The module has its optimal operating temperature range of -40 to 65. Over 70℃, charging and discharging should be stopped to preserve its performance and life cycle.

Do not expose to direct sunlight

For installation do not make the module expose to direct sunlight due to temperature increase inside the module.

Maintenance

The module has its projected life over 10years at rated voltage and +25℃. However the life cycle of the module may be decreased in high temperature condition or over voltage charging.

If following abnormal module performances are detected, operation should be stopped and checking the electrical & mechanical connections is recommended.

- Detection of high temperature in normal operating conditions

- Internal resistance increase or initial voltage drop increase

- Deformation of the module case

Appendix I