### Specifications

#### Separate type

- Up to 2S10P (total 20 Battery Modules) With 1 BMU.
- This module is suitable for applications such as low-height AGVs.

- Size compatible with lead-acid batteries
- BMU function is included

#### All-in-one type

- Size compatible with lead-acid batteries
- BMU function is included

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**FORTELION** is a lithium ion secondary battery with a cathode composed of olivine-type lithium iron phosphate, and has an expected life of 15 years or more with a high level of safety.

"FORTELION" and "muRata" are Registered trademark of Murata Manufacturing Co., Ltd.

"FORTELION" is a word created by combining the Italian word *forte* (strong) and *Li-ion*. This name incorporates the meaning of stronger safety, stronger life, and stronger environmental performance, with compared to typical lithium ion batteries.
Our safe lithium-ion secondary batteries expand the range of applications.

This module is equipped with “FORTELION”, Murata’s proprietary lithium-ion secondary battery using olivine-type lithium iron phosphate as the cathode, providing a long life with exceptionally high level of safety. FORTELION 24V Battery Module is capable of monitoring each Battery Module’s Voltage, Current, Temperature & Capacity Value through CAN communication. It is possible to customize voltage and capacity in order to meet the requirements of wide range of applications including Robot, AGV, E-Cart, Forklift, etc.

“FORTELION”
- First Lithium Ion Secondary Battery in Japan to obtain fire protection certification
- First to obtain the international standard (UL9540A) report

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### High Safety

Thanks to the stable crystalline structure made possible by employing olivine-type lithium iron phosphate as the cathode material, “FORTELION” is less vulnerable to breakage, less likely to catch fire, even if subjected to a large impact or significant pressure, and maintains a reliable battery performance even under intense workloads.

#### Long life

Designed to undergo more than 10,000 charge-discharge cycles, “FORTELION” provides a much longer expected operating life than lead-acid batteries that typically require replacement around 500 cycles or regular lithium-ion secondary batteries that are capable of 2,000 to 3,000 cycles.

### Fast charging

“FORTELION” can be charged to 90% of its full capacity in about one hour, allowing devices equipped with this battery to be charged during standby mode.

### Accurate remaining capacity calculation

The battery’s remaining capacity via CAN communication is accurately indicated as percentage (%) using Murata’s unique arithmetic processing technology based on the company’s knowhow developed with PCs, mobile phones, and other electronic devices.

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**Equipped with a safety mechanism and subjected to demanding safety testing in recognition of the risk of accidents and natural disasters**

The batteries are equipped with a safety mechanism. They are also subjected to demanding safety testing that anticipates accidents and natural disasters such as building collapse (crushing of the batteries) and nearby fires (overheating of the batteries).

#### Safety Mechanism

**Gas release mechanism that prevents explosion.**

If the pressure continues to rise even after the CID has been triggered, the safety vent changes shape and creates an opening to allow the internally generated gas to escape, preventing the battery from bursting.

**Current cutoff mechanism that prevents ignition even if the battery is penetrated by electrically conductive saltwater.**

Without a safety vent, the battery could explode.

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**Battery damage testing anticipates circumstances such as building collapse.**

A metal spike is driven into the battery, shorting its internal electrodes.

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**Safety Testing**

**Testing that anticipates nearby fire.**

Gas release mechanism that prevents explosion.

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**Testing that anticipates the effects of a tsunami.**

Current cutoff mechanism that prevents ignition even if the battery is penetrated by electrically conductive saltwater.