

Use case

Eaton Bussmann AMX & AMH bolt-down fuses



Eaton's bolt-down fuses offer reliable overcurrent protection in energy storage systems



Efficient and reliable energy storage is critical in a host of modern applications. Notably, battery technologies have become ubiquitous, owing to several benefits, including low costs, lightweight and compactness, and low self-discharge rates. Moreover, batteries can store energy produced by renewables to reduce the demand for grid power via peak shaving in peak hours of energy demand. Lithium-ion batteries, for example, provide high-density power, are easy to maintain, and offer thousands of charge cycles over a wide range of operating temperatures. Electric and hybrid-electric vehicles utilize Li-ion batteries as sole energy storage or to augment power from combustion engines.

The latest cell chemistries emphasize higher power density in smaller sizes to meet the demand for miniaturization. However, this increases the likelihood of damaging fault currents that could result in overheating or internal short circuits during charge. Moreover, there is a risk of thermal runaway causing a rapid rise in temperature and pressure within cells. Due to these limitations, Li-ion battery systems require robust circuit protection to limit the peak voltage as well as maximum charge and discharge currents during operation.

Fuses are some of the most common circuit protection elements designed to limit overcurrent in electronic applications. Fuses are available in a wide range of designs, such as bolt-down fuses

(which are well-suited for battery protection). To meet the needs of high-power energy, industrial, and automotive applications, bolt-down fuses with high interrupt ratings as well as high current, high voltage capabilities are critical. Due to high temperatures and severe conditions typical in higher amperage applications, fuses must perform reliably in a broad range of operating temperatures. Bolt-down fuses must also be sufficiently lightweight and compact for seamless integration into the most space-constrained and component-dense PCBs.

Eaton Bussmann series AMX & AMH are a family of bolt-down fuses that provide best-in-class power density with nominal current ratings of 350 A and 500 A respectively.

These two product families offer high voltage ratings of up to 125 Vdc and ultra-high interrupt ratings of up to 20 kA. They are suited for overcurrent protection in high-current power distribution applications and protect against damaging fault currents due to the latest battery technologies. They also offer a rejection feature to prevent lower voltage options from being used in place. Applications for Eaton's AMX and AMH fuses include energy, industrial, and transportation, including mild-hybrid automotive, vehicle power distribution, material handling systems, aircraft power distribution, high current wire protection, as well as supercapacitor and battery systems.

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