

# ESS-A123 (Energy Storage System)

BAE Systems ESS-A123 is based on lithium-ion nano-iron-phosphate technology and uses an advanced battery module design to provide power and energy density in a compact, lightweight enclosure. The system delivers power during acceleration and peak power demands and it accepts power (regenerative braking energy) during deceleration. The use of lithium-ion technology enables the system to be substantially smaller and lighter than other energy storage technologies.

The significantly reduced system weight contributes to improved fuel economy and reduced brake wear, and allows for greater weight capacity for passengers. The modular construction enables easy servicing. ESS-A123 features improved filtering, enclosure updates, and better environmental protection of module electronics for improved reliability, safety, and service life. It is available for the HDS100, HDS200, and HDS300 systems. It is also compatible with legacy TB-08 systems for retrofits and upgrades.



Single, air-cooled enclosure  
84 x 41 x 12 in  
(213cm x 104 cm x 30 cm)  
16 individual modules  
each at 18 lbs (8.2 Kg)



Individual ESS module

## Features

- Lithium-iron-phosphate technology
- Lightweight
- Individual modules easily replaced if needed
- Ambient air-cooled
- Supports full electric accessories
- Supports Stop/Start and Depot Drive
- Cold-weather kit option for operation below 14°F (-10°C)

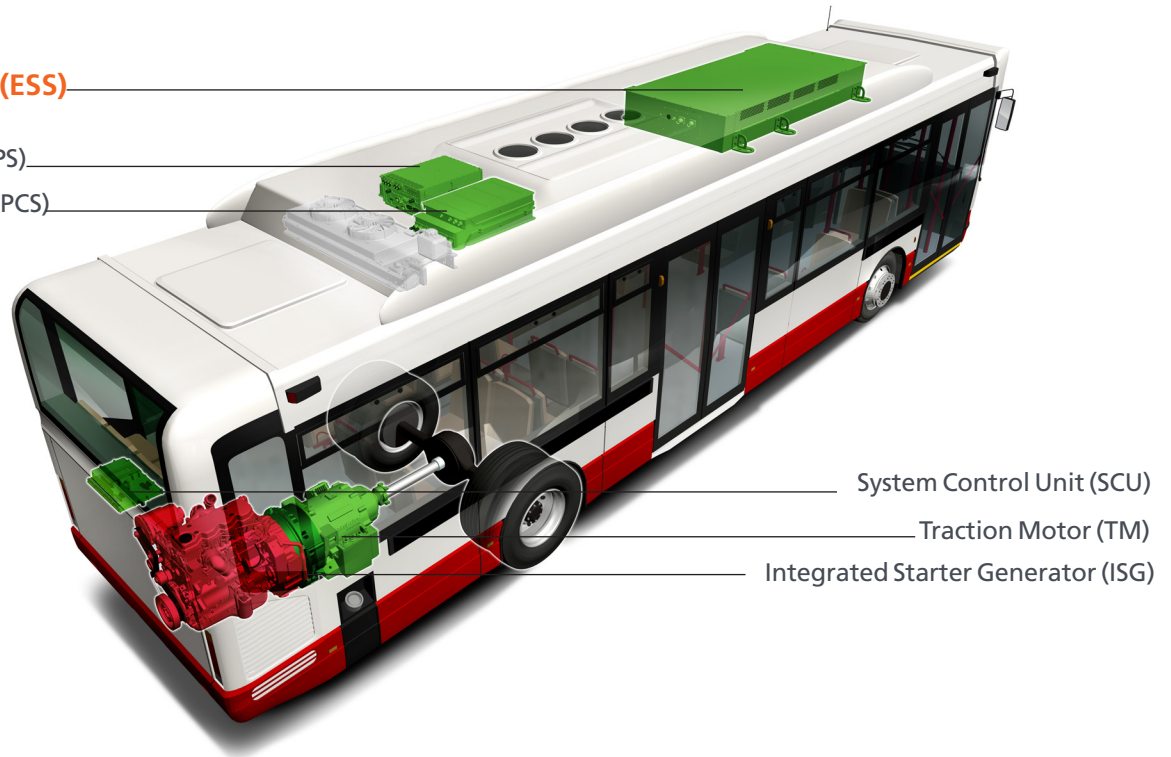
## Benefits

- Superior regenerative energy recovery to improve fuel economy
- Improved safety through the use of nano-iron-phosphate technology
- Built-in module redundancy improves reliability

## Energy Storage System (ESS)

Accessory Power System (APS)

Propulsion Control System (PCS)



System Control Unit (SCU)

Traction Motor (TM)

Integrated Starter Generator (ISG)

\*Position may vary depending on OEM

### ESS-A123 (lithium-ion)

#### Ratings

- Peak design power:  $\pm 200$  kW
- Nominal Voltage: 663Vdc
- Total capacity: 11.6kWh
- DC bus output voltage: 500 - 750 Vdc (635 Vdc nominal)
- Operating temperature: -40°F to 125°F (-40°C to 52°C)
- Cold-weather kit required below 14°F (-10°C)

#### Size

- Height: 12 in (.306 m)
- Width: 41 in (1.159 m)
- Length: 84 in (2.169 m)
- Weight: 800 lbs (385 kg), +50 lbs (+23kg) with cold-weather option

#### Cooling

- Forced ambient air
- Provided by dual-integrated variable speed fans

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