Battery Energy Storage System

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal): 120/208 volts

Feed-In Type: Split Phase

Real Power, maximum continuous: 60 kW*

*please specify number of standard units

Usable Energy: 160 kWh or specify

Grid Frequency: 60 Hz

Maximum Supply Fault Current 10 kA

Maximum Output Fault Current 32 A

Overcurrent Protection Device 30 A

Imbalance for Split-Phase Loads 100%

Power Factor Output Range +/– 1.0 adjustable

Power Factor Range (full-rated power) +/– 0.85

Internal Battery DC Voltage 50 V

Round Trip Efficiency: 90%

Warranty: Please specify

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature –20°C to 50°C (–4°F to 122°F)

Recommended Temperature 0°C to 30°C (32°F to 86°F)

Operating Humidity (RH) Up to 100%, condensing

Storage Conditions –20°C to 30°C (–4°F to 86°F)

Up to 95% RH, non-condensing

State of Energy (SoE): 25% initial

Maximum Elevation 3000 m (9843 ft)

Environment Indoor and outdoor rated

Enclosure Type NEMA 3R

Ingress Rating IP67 (Battery & Power Electronics)

IP56 (Wiring Compartment)

Wet Location Rating Yes

Noise Level @ 1m < 40 dBA at 30°C (86°F)

COMPLIANCE INFORMATION

Certifications UL 1642, UL 1741, UL 1973,

UL 9540, IEEE 1547, UN 38.3

Grid Connection Worldwide Compatibility

Emissions FCC Part 15 Class B, ICES 003

Environmental RoHS Directive 2011/65/EU

Seismic AC156, IEEE 693-2005 (high)

Mechanical Specifications (please specify)

Dimensions __ H x __W x __D

Weight

Clearance requirements when grouped together

- above/ below
- side to side

Texas A&M University (TAMU) Department of Electrical Engineering seeks to partner with a battery energy storage manufacturer in a research project to explore the role of battery energy storage systems (BESS) in the overall functioning of the secondary distribution system with high penetration of distributed generation including electric vehicles. In order to accomplish these goals TAMU requests the following:

1. An assembled system comprised of standard units in quantities to provide nominal 60 kW rated continuous power capacity and minimum of 160 kWh usable energy capacity.
2. Ability to define experimental use-case scenarios that change the operating mode of the BESS to perform experiments as follows :
    a. Modify charge/discharge profiles at the AC connection point to investigate various operating scenarios such as
        i. Load following mode
        ii. Voltage control
        iii. Power factor correction
        iv. State of Charge (SOC) maintenance
        v. Power balancing to synthesize optimal value operation by balancing grid, photovoltaic and battery systems

    b. Obtain operating information from the BESS in real time including: battery state of health, state of charge, cell temperature, and voltage and current.
    c. Accommodate an external BEES controller that provides real time input signal to adjust BESS operation is one or more of the following:
        i. 4-20 mA,
        ii. 0-10 volts,
        iii. mod bus,
        iv. ethernet.
3. TAMU expects that the low-level battery management systems (BMS) will continue to operate as intended by the manufacturer to ensure the batteries always operate within safe limits.
    a. If the low-level BMS prevents the requested higher-level function then the modified operation command is communicated to the

external BESS controller system. (i.e., requested discharge C-rate is reduced because of battery temperature, etc.).

4. TAMU understands that to allow the requested functionality may require “engineering units” instead of off-the-shelf commercial units to unlock or allow the requested operation. The requested operation may degrade the lifetime of the battery packs and/or inverters.