EVAmerica
U.S. Department of Energy Advanced Vehicle Testing Activity

BMW MOTORS
2009 MINI E

VEHICLE SPECIFICATIONS

BASE VEHICLE: 2009 BMW MINI E
Seatbelt Positions: Two
Standard Features:
- Front Wheel Drive
- Front Disc and Rear Disc Brakes
- Regenerative Braking With Coast Down
- Three-Point Safety Belts
- Speedometer
- Odometer
- State-Of-Charge Meter

BATTERY
Type: Lithium Ion
Number of Modules: 48
Weight of Pack(s): 260 kg
Pack(s) Location: Behind the front seats in the rear cargo area
Nominal System Voltage: 380V

POWER PLANT
Motor Controller: AC Propulsion
Type: AC Induction Motor
Power: 150 kW (200hp)
Torque: 220 Nm (162 ft/lb)

WEIGHTS
Design Curb Weight: 3230 lb
Delivered Curb Weight: 3306 lb
Distribution F/R: 51/49 %
GVWR: 3660 lb
Payload[2]: 354 lb
Performance Goal: 400 lb

DIMENSIONS
Wheelbase: 97.1 inches
Track F/R: 57.4/57.8 inches
Length: 145.6 inches
Width: 66.3 inches
Height: 55.4 inches
Ground Clearance: 6.0 inches
Performance Goal: 5.0 inches

CHARGER
Level 1:
Location: On-board
Type: Conductive
Input Voltages: 120VAC
Level 2:
Location: Off-board
Type: Conductive
Input Voltages: 240 VAC

TEST NOTES:
1. Vehicle was operated at the specified test speed until the vehicle could no longer maintain the desired speed..
2. As delivered payload was 354 Lbs.
3. Hours were calculated at time that charger indicated completion.

This vehicle meets all EV America Minimum Requirements listed on back.
Values in **red** indicate the Performance Goal was not met. • All Power and Energy Values are DC unless otherwise specified.

PERFORMANCE STATISTICS

Acceleration (0-50mph) @ 332 lbs Payload
At 100% SOC: 8.3 seconds
Max Power: 150.2 kW
At 50% SOC: 8.5 seconds
Max Power: 109.7 kW
Performance Goal (0-50mph): 13.5 sec

Maximum Speed @ 332 lbs Payload
At 100% SOC: 81.1 mph
At 50% SOC: 80.7 mph
Performance Goal: 70 mph

Constant Speed Range @55mph[1]
Range: 129.5 miles
Energy Used: 30.273 kWh
Efficiency: 233.8 Wh-DC/mile
Specific Energy: 116.4 Wh/kg
Charging Energy: 36.14 AC kWh
Performance goal: 50 miles

Constant Speed Range @65mph[1]
Range: 104.15 miles
Energy Used: 29.344 kWh
Efficiency: 281.7 Wh-DC/mile
Specific Energy: 112.9 Wh/kg
Charging Energy: 35.40 AC kWh

Driving Cycle Range (UDDS)
Range per SAE J1634: 142.45 miles
Energy Used: 29.656 kWh
Efficiency: 208.2 Wh/mile
Specific Energy: 114.1 Wh/kg
Charging Energy: 36.86 AC kWh
Performance Goal: 60 miles

Driving Cycle Range (HWY)
Range per SAE J1634: 137.34 miles
Energy Used: 30.677 kWh
Efficiency: 223.4 Wh/mile
Specific Energy: 118.0 Wh/kg
Charging Energy: 36.86 AC kWh

Gradeability:
Maximum Speed @ 3%: 80.4 mph
Maximum Speed @ 6%: 80.3 mph
Maximum Grade: 33%

Charging Efficiency:
Efficiency: 258.7 Wh-AC/mi
Energy Cost: @ $0.10/kWh: $0.025/mi

Level 1 Charger (@110V/12A)
Time to Recharge to Complete: 26.5 hrs

Level 2 Charger (@240V/32A)
Time to Recharge to Complete:4.5 hrs

Level 2 Charger (@240V/48A)
Time to Recharge to Complete: 3 hrs

This vehicle complies with mandatory requirements of EV America Vehicle Technical Specification, Revision 1 as follows.

1. Vehicle has a payload of at least 400 pounds.
2. The OEM GVWR has not been increased.
3. The OEM GAWRs have not been increased.
4. Seating capacity is a least two (2) occupants.
5. A battery recycling plan has been submitted.
6. The OEM passenger space has not been intruded upon by the electrical conversion materials.
7. The vehicle has a parking mechanism or parking brake as required by 49 CFR 571.105.
8. The vehicle has a minimum range between charges of at least 50 miles when loaded with two 166-pound occupants and operated at a constant 45 mph.
9. The vehicle manufacturer has certified that this vehicle complies with the Federal Motor Vehicle Safety Standards (FMVSS) applicable on the date of manufacture.
10. The vehicle manufacturer has certified the batteries and battery enclosures comply with SAE J1766 and 49 CFR 571.301.
11. Batteries comply with the requirements of SAE J1718 and NEC 625 for charging in enclosed spaces without vent fans.
12. The vehicle manufacturer has certified that concentrations of explosive gases in the battery box do not exceed 25% of the Lower Explosive Limit (LEL) during
    and following normal or abnormal charging and operation of the vehicle.
13. The battery charger is capable of recharging the main propulsion batteries to a state of full charge from any state of discharge in less than 12 hours.
14. The vehicle manufacturer has certified the charger is capable of accepting input voltages of 208V and 240V single phase 60 Hertz alternating current service, with
    a tolerance of 10% of rated voltage. Charger input current is compatible with the requirements for Level II chargers and complies with the requirements of SAE J1772.
    Personnel protection systems are in accordance with UL Proposed Standards 2231-1 and 2231-2.
15. The charger has a true power factor of .95 or greater and a harmonic distortion rated at < 20% (current at rated load).
16. The charger is fully automatic, determining when "end of charge" conditions are met and transitioning into a mode that maintains the main propulsion
    battery at a full state of charge while not overcharging it, if continuously left on charge.
17. The vehicle does not contain exposed conductors, terminals, contact blocks or devices of any type that create the potential for personnel to be exposed to 50 volts or greater.
18. The vehicle will be accompanied by non-proprietary manuals for parts, service, operation, maintenance, interconnection wiring diagrams and schematics.
19. The vehicle has a state of charge indicator for the main propulsion batteries.
20. Propulsion power is isolated from the vehicle chassis and battery leakage is less than 0.5 MIU under static conditions.
21. Charging circuits are isolated from the vehicle chassis such that ground current from the grounded chassis any time the vehicle is connected to a charger does not
    exceed 5 mA in accordance with UL Proposed Standards 2231-1 and 2231-2.
22. Replacement tires are commercially available to the end user.
23. The vehicle is interlocked such that: The controller does not energize to move the vehicle with the gear selector in any position other than "Park" or "Neutral".
    The start key is removable only when the "ignition key" is in the "Off" position, with the drive selector in "Park". The controller does not initially energize or
    excite with a pre-existing accelerator input, such that the vehicle can be moved under its own power from this condition
24. The vehicle manufacturer has certified that the vehicle complies with the FCC requirements for unintentional emitted electromagnetic radiation, as identified in
    47 CFR 15, Subpart B, "Unintentional Radiators."
25. The vehicle manufacturer has certified failure of a battery or battery pack has deemed to have occurred if the actual battery capacity is not at least 80% of the
    nominal ampere hour capacity.
26. This vehicle is equipped with an automatic disconnect and a manual service disconnect.
27. The charging system is compatible with the Personnel Protection requirements of SAE J1772.
28. Material Safety Data Sheets (MSDS) have been supplied for all on-board batteries.
29. The level of charge below which the batteries should not be discharged and how the controller automatically limits battery discharge below this level have been identified
    by the manufacturer.
30. The vehicle manufacturer has verified that the method(s) of charging the propulsion batteries and the charging algorithm have been reviewed and approved by the battery manufacturer.
31. The charger is capable of meeting the requirements of Section 625 of the National Electric Code (NEC).
32. The vehicle complies with the requirements of 49 CFR 571.301 for fuel fired heaters.
33. The vehicle has an on-board Battery Energy Management System (BMS).

This information was prepared with the support of the U.S. Department of Energy, Office of Transportation Technology, Fleet Operations Program under Award No. DE-FC26-05NT42486. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and may not reflect the views of the U. S. Department of Energy.