



1999 GENERAL MOTORS EV1 w/NiMH

VEHICLE SPECIFICATIONS

PURPOSE-BUILT VEHICLE

Base Vehicle: 1999 EV1 NiMH
VIN: 4G5PX2256X00076
Seatbelt Positions: Two
Standard Features:

Cruise Control Dual Airbags
Power Steering Traction Control
Daytime Running Lamps
Power Windows, Mirrors & Door Locks
AM/FM Stereo w/Cassette and CD Player
Regenerative Braking with Coastdown
Electro-Hydraulic Braking with ABS
Electro Windshield Defogger & De-Icer
Lightweight Bonded Aluminum Structure
Check Tire Pressure System
High Voltage Isolation Assurance
Heat Pump Climate Control System
w/Pre-Conditioning Feature
Electronic Key Pad Entry/Activation

BATTERY

Manufacturer: Ovonic Energy Products
Type: Nickel Metal Hydride
Number of Modules: 26
Weight of Module: 18.3 kg
Weight of Pack(s): 481 kg
Pack Locations: Integral T-Pack
Nominal Module Voltage: 13.2 V
Nominal System Voltage: 343 V
Nominal Capacity (C/2): 85 A/H

WEIGHTS

Design Curb Weight: 2970 lbs
Delivered Curb Weight: 2848 lbs
Distribution F/R: 53/47 %
GVWR: 3410 lbs
GAWR F/R: 1705/1705 lbs
Payload: 440 lbs
Performance Goal: 400 lbs

DIMENSIONS

Wheelbase: 98.9 inches
Track F/R: 57.9/49.0 inches
Length: 169.7 inches
Width: 69.5 inches
Height: 50.5 inches
Ground Clearance: **4.3 inches at GVWR**
Performance Goal: 5.0 inches at GVWR

CHARGER

Location: Off-Board
Type: Magne Charge Inductive 6.6 kW
Input Voltages: 191 - 256 VAC

TIRES

Tire Mfg: Michelin
Tire Model: Proxima RR™ Radial
Tire Size: P175/65R14
Tire Pressure F/R: 50/50 psi
Spare Installed: No; Self Sealing Tires

TEST NOTES:

- At test termination vehicle was still able to maintain required drive schedule.
- Testing was terminated upon illumination of the Service Now TellTale.
- As detailed in the Owners Manual, the Battery Life, Reduced Performance, Service Soon and Service Now telltales illuminated during the drive schedules.
- On 3% Grade, this vehicle completed 67 minutes 9 seconds from 100% SOC.
- Standing water test was conducted in 6" versus 8" identified in procedure.
- General Motors provided instrumentation connections, including a 100:1 voltage divider and battery pack thermocouple.
- Vehicle was removed from Test Program for one 24-hour repair period to replace a battery module.
[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.

ACCELERATION 0-50 mph

At 100% SOC: 6.3 sec
At 50% SOC: 6.5 sec
Max. Power: 104.0 kW
Performance Goal: 13.5 sec

MAXIMUM SPEED @ 50% SOC

At 1/4 Mile: 78.3 mph
At 1 Mile: 79.6 mph
Performance Goal: 70 mph in One Mile

CONSTANT SPEED RANGE @ 45 mph^{1,2,3}

Range: 220.7 miles
Energy Used: 28.15 kWh
Average Power: 5.81 kW
Efficiency: 127 Wh/mile
Specific Energy: 58.5 Wh/kg

CONSTANT SPEED RANGE @ 60 mph^{1,2,3}

Range: 160.6 miles
Energy Used: 27.04 kWh
Average Power: 10.28 kW
Efficiency: 168 Wh/mile
Specific Energy: 56.2 Wh/kg

DRIVING CYCLE RANGE^{1,2,3}

Range per SAE J1634: 140.3 miles
Energy Used: 25.14 kWh
Average Power: 5.28 kW
Efficiency: 179 Wh/mile
Specific Energy: 52.3 Wh/kg
Performance Goal: 60 miles

BRAKING FROM 60 mph

Controlled Dry: 160.0 feet
Controlled Wet: 158.4 feet
Panic Wet: 172.4 feet
Course Deviation: 0.0 feet

HANDLING

Avg Time @ 90% SOC: 55.1 sec
Avg Time @ 50% SOC: 54.4 sec
Avg Time @ 20% SOC: 54.3 sec
Avg Dodge Neon Time: 54.6 sec

GRADEABILITY (Calculated)

Maximum Speed @ 3%: 78.8 mph
Maximum Speed @ 6%: 78.3 mph
Maximum Grade: 56.9%
Time on 3% Grade: 32 min 25 sec⁴
Performance Goal: 15 min from 50% SOC

CHARGING EFFICIENCY

Efficiency: 373 Wh-AC/mile
Energy Cost: 3.73 ¢/mile

CHARGER

Max Charger Ground Current: <0.01 mA
Max Battery Leakage Current: <0.01 MIU
Max DC Charge Current: 13.75 Amps
Max AC Charge Current: 31.86 Amps
Pwr Factor @ Max Current: 0.998
THD(I) @ Max Current: 5.32%
Peak Demand: 6.7 kW
Time to Recharge: 6 Hrs 58 min
Performance Goal: 8 hours

This vehicle meets the following EV America Minimum Requirements:

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 minimum of (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 requirements of SAE J1718 and NEC 625 for charging in enclosed spaces without vent fans.
12. The vehicle manufacturer has certified 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 $\leq 20\%$ (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 is accompanied by non-proprietary manuals for parts, service, operation and 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 current 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. The 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 methods(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 (DOE) Award No. DE-FC07-96ID 13475. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of DOE.