AC PROPULSION

AC-150 Gen-2 EV Power System

Integrated Drive and Charging for Electric Vehicles

A Complete, Self-Contained Power Package
That Delivers Superior EV Performance

Output
at motor shaft

150 kW @ 7,000 - 8,000 rpm
220 Nm @ 0 - 5,000 rpm

Efficiency
battery-to-shaft

91% peak efficiency
86% at road load

Charger
unity PF, GFI compatible

200 to 20,000 Watt
bi-directional Reductive™

Package
motor, inverter, charger, power supply

80 kg total including motor (not shown) and cooling system

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SYSTEM DESCRIPTION

The AC-150 drive system includes a power electronics unit and AC-induction traction motor that combine to provide high performance, high efficiency, and rapid, convenient charging capabilities for electric vehicle applications. The system delivers up to 150 kW (200 hp) motor output, yet maximizes vehicle operating range with high efficiency over a broad operating range and comprehensive energy recovery through regenerative braking.

The AC-150 embodies patented control and construction techniques that allow the power electronics and motor windings to be re-configured as a high-rate Reductive™ battery charger. By using existing components, the Reductive™ Charger reduces vehicle cost and weight. By allowing safe charging from existing 110V to 240V outlets at rates as high as 20 kW, the Reductive™ Charger reduces infrastructure installation requirements and costs, and its innovative bi-directional power capability allows self contained vehicle battery diagnostics, standby power generation, and value-added grid power functions.

SYSTEM FEATURES

Advanced Drive Control Circuitry

"Glass smooth" torque under all load and speed conditions

Natural and transparent driving feel

Driver adjustable regeneration

Traction control

* Integral power distribution and fusing for battery optimizer, cabin PTC heater and hybrid / fuel cell APU.

Speed control available

Integrated Bidirectional Reductive™ Charger

Charge from any power source between 100 and 250 VAC

Charge rate controllable from 200W up to 20kW (with 240 V line)

Unity power factor, sine wave current draw

GFI outlet compatible

Automatic mode switching (recharge mode activated when charge power is connected)

* controlled battery discharge into power line for battery diagnostics and conditioning

* UPS mode for backup power and energy transfer to other electric vehicles.

Designed-in Safety

Protection against over-current, over-voltage and over-temperature conditions.

Battery floats with respect to vehicle chassis

Double insulated motor

Zero motor back-EMF when excitation removed

Interlocks prevent accidental operation

OPERATING PERFORMANCE

Voltage	336 – 360 V nominal 240 V min, 450 V max
Current	580 Adc max (drive) -200 Adc max (regeneration)
Torque	220 Nm max, 0-5,000 rpm (drive) 115 Nm max (regeneration)
Power	150 kW max, 7,000-8,000 rpm 50 kW continuous at 8,000 rpm (torque and power at 336V DC input)
Efficiency:	91% peak (50 kW, 9000 rpm) 86% road load (8 kW, 8500 rpm) >93% recharge (240V line, 10 kW)

POWER ELECTRONICS UNIT

Pulse-width-modulated, voltage fed, IGBT inverter with current mode, sine-modulated controls; battery charging circuitry; auxiliary 13.5V power supply; and interfaces for control pedals and dash instruments. Environmentally rugged forced air-cooled design.

Dimensions*:	186 x 313 x 760 mm
Total weight:	30 kg (incl blower)
Cooling:	Forced-air with pwm speed control
Power connectors:	Aircraft-style circular

Control connectors: AMP waterproof automotive

Control inputs: Ground-referenced signals for key switch, accelerator pedal, regenerative sensitivity, forward, neutral, and reverse; and RS-232 for recharge/discharge control and cabin heat. Optional CAN bus.

Instrumentation outputs: RS-232 for battery voltage, Inverter, hybrid and acc. Current, inverter temp, motor temp, motor rpm, motor direction, line voltage, line current, battery isolation, and 12V bus voltage

Aux Power supply current rating**: 100 A @ 13.5 V

MOTOR

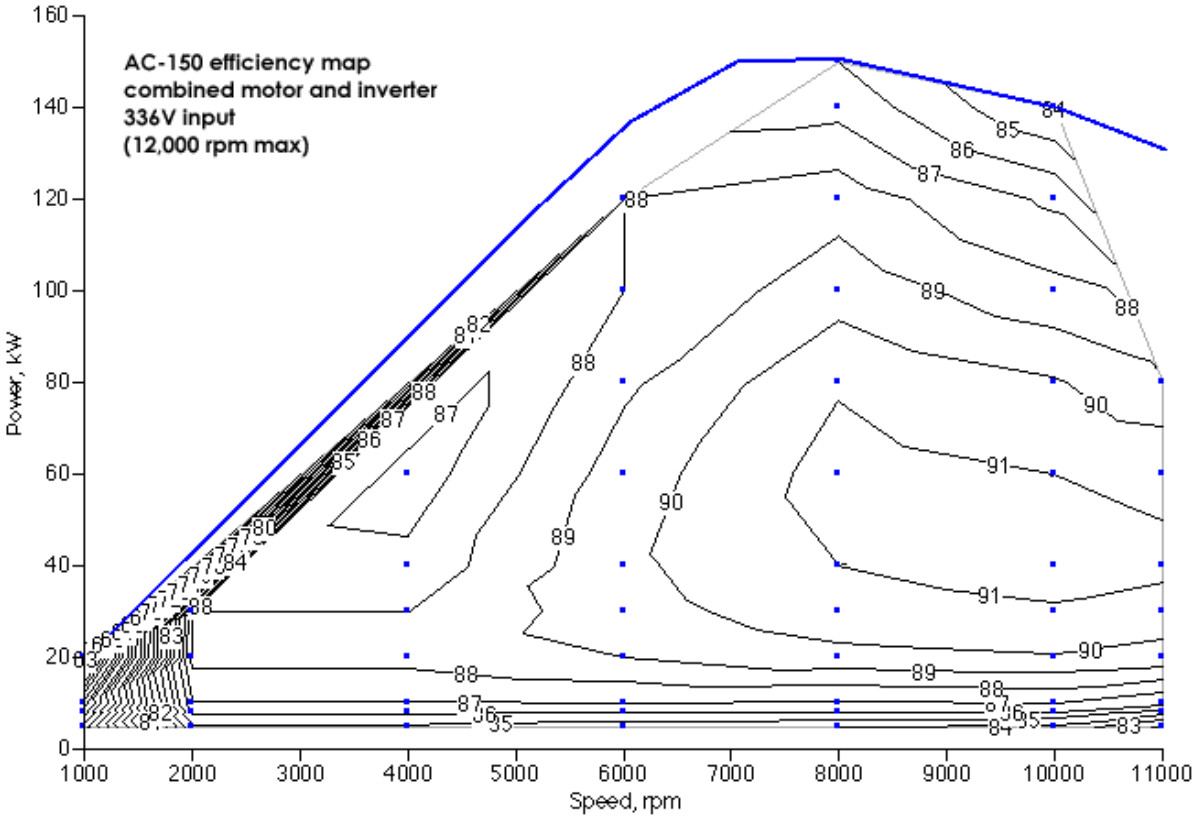
Four-pole induction, high frequency design with inverter-controlled magnetic flux.

Dimensions*:	245mm dia x 350 mm long
Total weight:	50 kg (incl blower)
Maximum rpm:	12,000
Insulation:	Class H, double-insulated
Cooling:	Forced-air with pwm speed control
Sensors:	Winding temp, tachometer

* dimensions exclude blower and connectors

** up to 30 A allocated for cooling blowers

for more information, contact info@acpropulsion.com



AC 150 Gen 2 Recharge Efficiency