



PowerPhase[®] 145

for electric, hybrid electric, and fuel cell powered vehicles



Key Features:

- 400 Nm peak torque
- 145 kW peak, 85 kW continuous motor power
- 145 kW peak, 85 kW continuous generator power
- Full Power at 340-420 VDC
- EV/HEV traction drive or HEV starter/generator system
- Efficient, power dense, brushless permanent magnet motor
- Microprocessor-controlled inverter with sine wave drive
- Application-friendly graphical user interface
- Regenerative Braking

Driver Electronics Incorporate:

Serial communication
CAN bus compatibility
Diagnostic capability
Temperature sensing/alarm
Speed sensing
Graphical user interface

Benefits:

Tight voltage regulation
Improved braking and extended range
Suitable for automotive applications
Enhanced thermal management
Torque, speed, and voltage control modes
Rugged, weatherproof enclosure
Liquid cooling
Light weight

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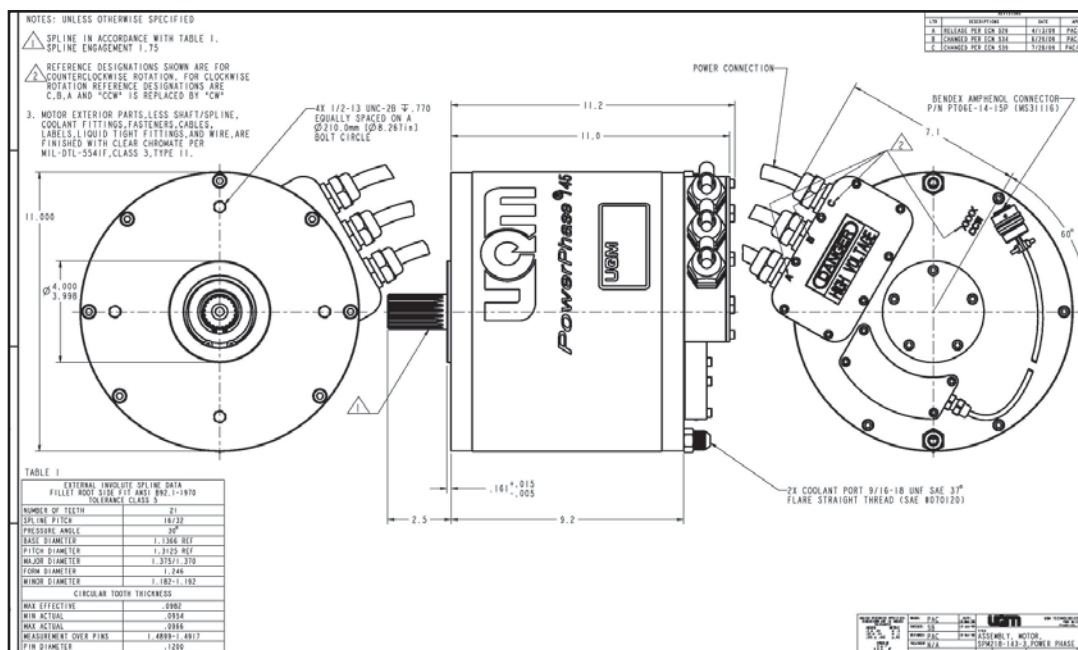
SPM218-143-3 Motor/Generator

Dimensions

Length	10.987 in	279 mm
Diameter	11.00 in	280 mm
Weight	110 lb	50 kg

Performance

Peak power	194 hp	145 kW
Continuous power at 5,000 rpm	114 hp	85 kW
Peak torque	295 lbf•ft	400 N•m
Continuous torque	184 lbf•ft	250 N•m
Maximum speed	8000 RPM	
Maximum efficiency	94%	
Power density (based on 145 kW)	1.76 hp/lb	2.90 kW/kg



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DD45-500L Inverter/Controller

Operating Voltage

Nominal input range	340 to 420 VDC
Operating voltage input range	240 to 420 VDC
Minimum voltage limit	240 VDC (with derated power output)
Input current limitation	500 A

Inverter Type

Control type	PWM & phase advance, 3-Phase Brushless PM
Power device	IGBT module half bridge × 3
Switching frequency	12.5 kHz
Standby power consumption	17 W (inverter and microprocessor)

Dimensions

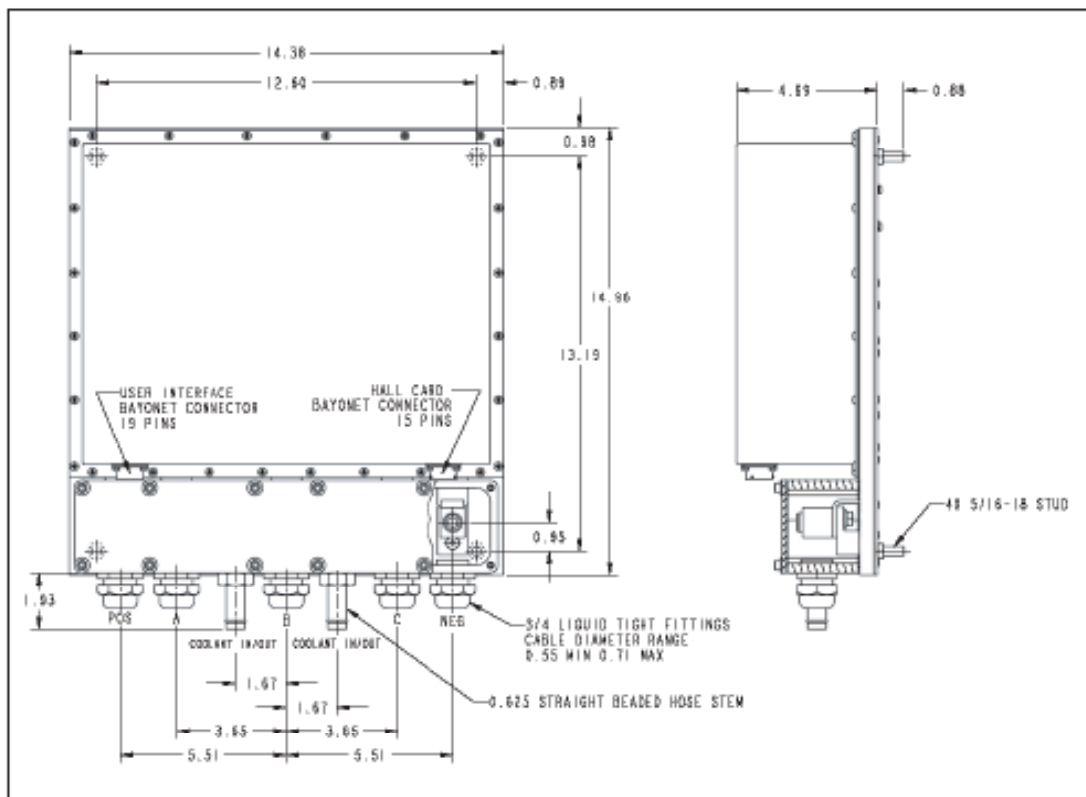
Length	14.96 in	380 mm
Width	14.37 in	365 mm
Height	4.69 in	119 mm
Weight	35.0 lb	15.9 kg

Liquid Cooling System

Minimum coolant flow	8 l/min (50/50 water/glycol mix)
Max. inlet temp of controller	131° F 55° C
Inner diameter of hose	5/8 in 16 mm
Max. inlet pressure	10 psig 0.7 bar

TI2812 Digital Signal Processor (internally packaged)

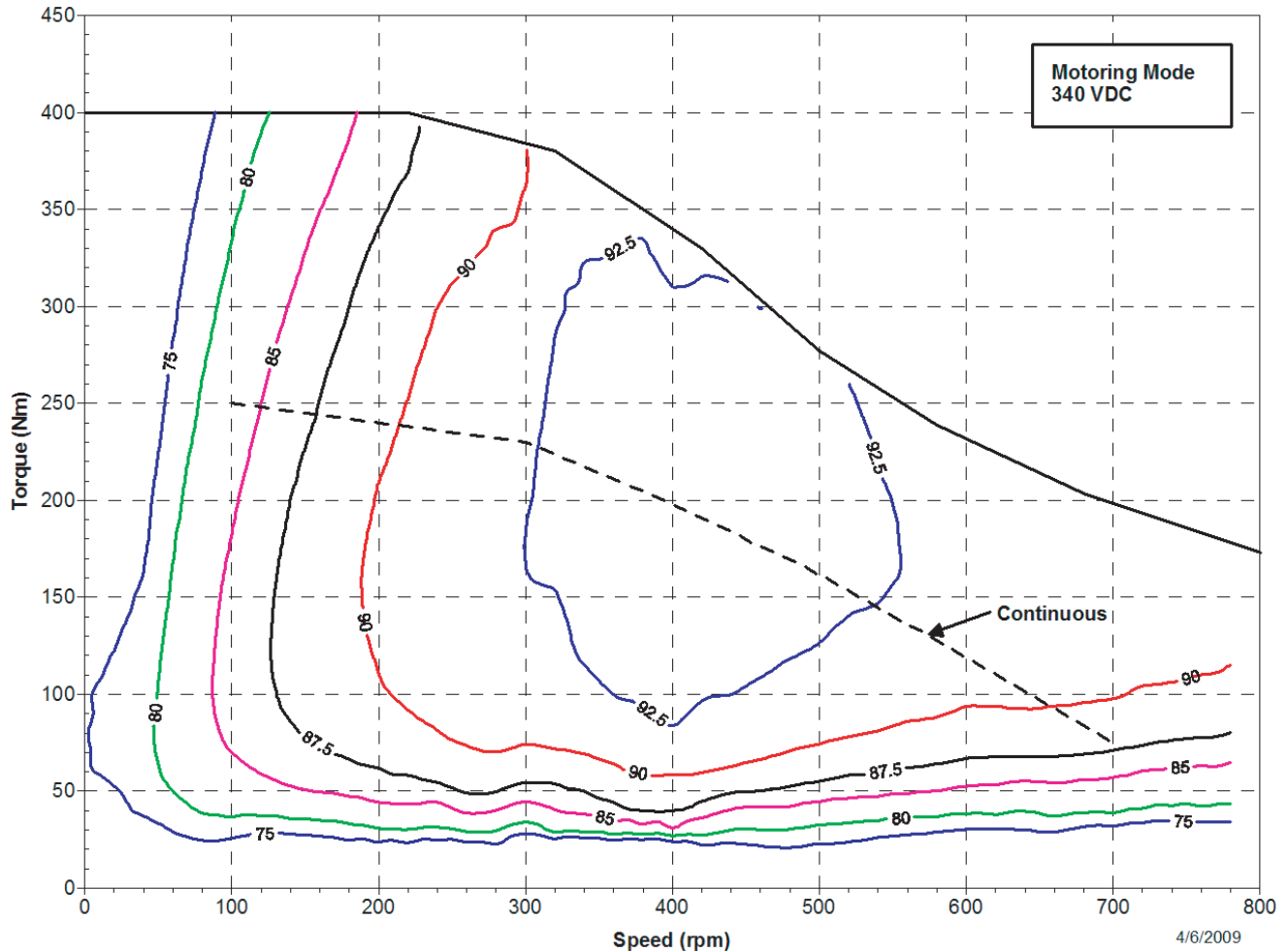
Nominal input voltage	12 VDC
Input supply voltage range	8 to 15 VDC
Input supply current range	0.3 to 0.5 A



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Motoring Efficiency Map

Includes controller and motor



Testing Conditions

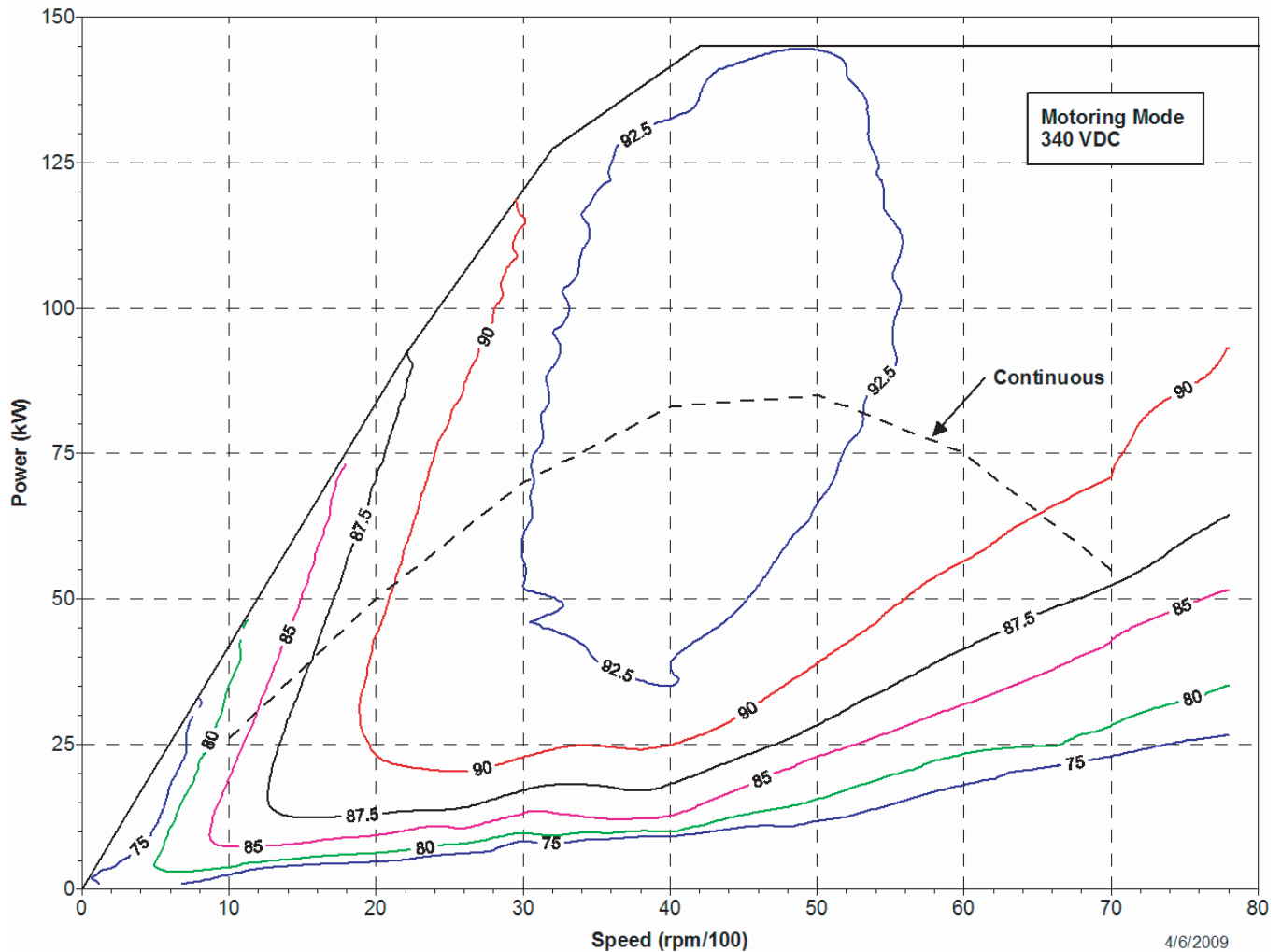
Continuous Output: 85 kW at 5,000 rpm with 340 VDC input, 55°C coolant

Peak Output: 145 kW with 340 VDC input, 55°C coolant, duration 30-90 seconds

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Motoring Efficiency Map

Includes controller and motor



Testing Conditions

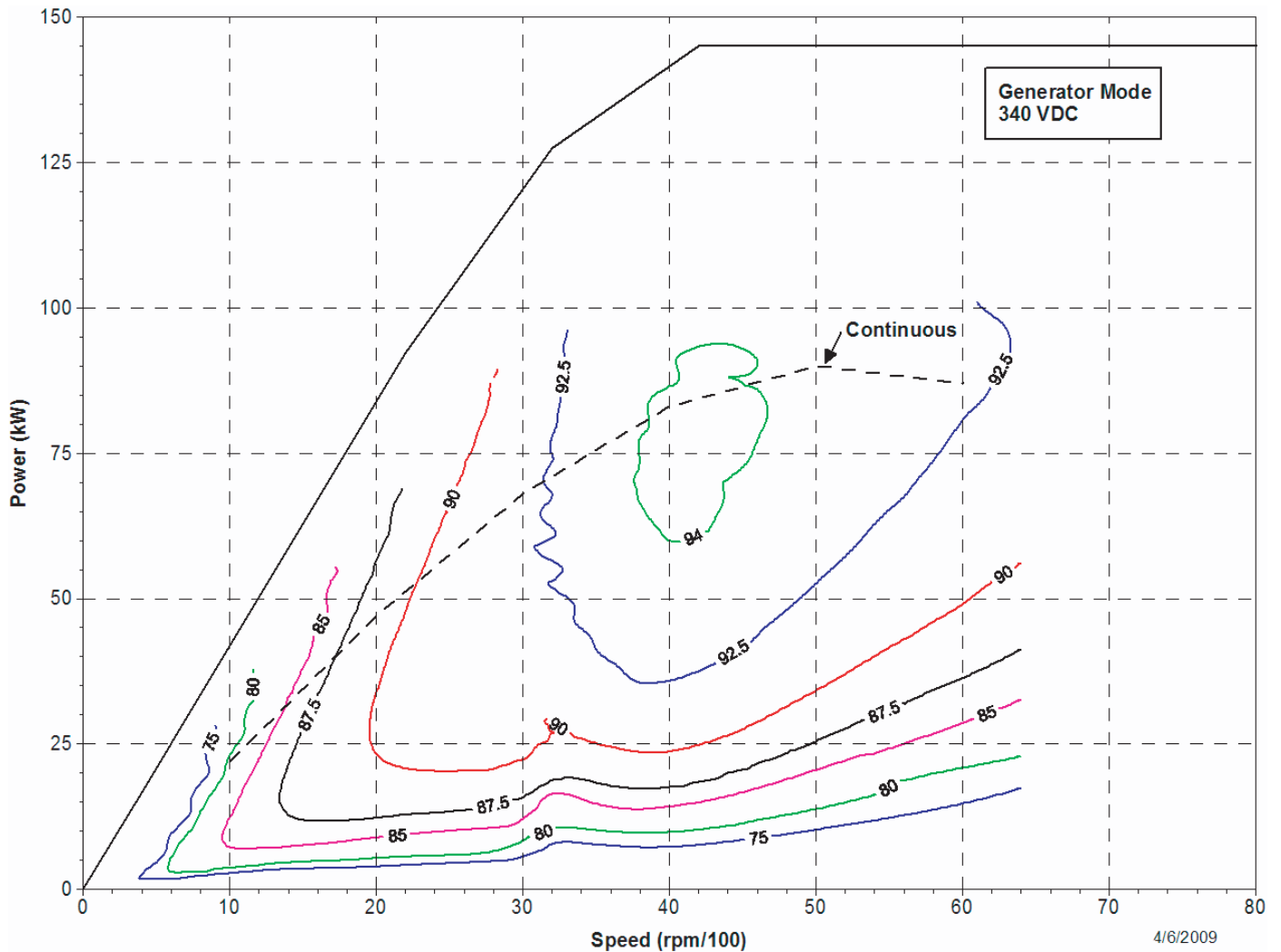
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Generating Efficiency Map

Includes controller and generator



Testing Conditions

Continuous Output: 85 kW at 5,000 rpm with 340 VDC input, 55°C coolant

Peak Output: 145 kW with 340 VDC input, 55°C coolant, duration 30-90 seconds