



PowerPhase[®] 200

for electric, hybrid electric, and fuel cell powered vehicles



Key Physical Features:

- 900 Nm peak torque
- 200 kW peak, 115 kW continuous motor power
- 200 kW peak, 120 kW continuous generator power/regenerative braking
- Full Power at 360 - 440 VDC
- EV/HEV traction drive or HEV starter/generator system
- Efficient, power-dense, brushless permanent magnet motor
- Microprocessor-controlled inverter with sine wave drive
- Rugged, weatherproof enclosure with liquid cooling

Key Control Features:

- Torque, speed and voltage control modes
- Significant diagnostic capabilities
- Speed, voltage, current, and temperature measurements via CAN
- Enhanced thermal management
- Automatic protection for torque/speed/voltage/current/temperature
- User programmable system limits
- Active damping capabilities
- Controlled speed and voltage ramping
- Graphical User Interface via RS232
- Battery safety limitations (programmable)
- Data logging and trigger activated data acquisition
- CAN or analog control modes
- CAN J1939 compatible

PowerPhase[®] 200

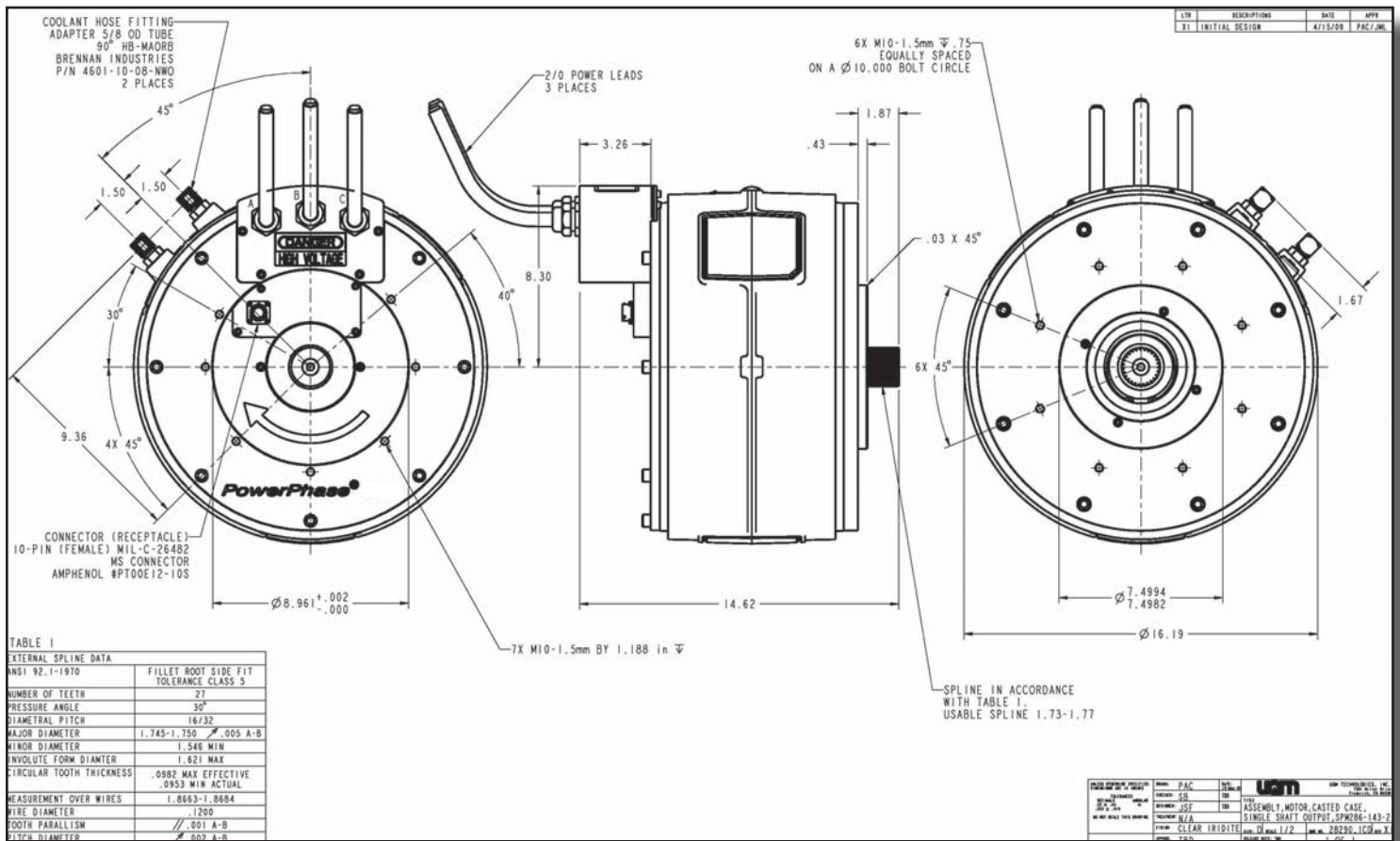
SPM286-149-2 Motor/Generator

Dimensions

Length	9.49 in	241 mm
Diameter	16.19 in	411 mm
Weight (with 6 ft leads)	208 lb	95 kg

Performance

Peak power	268 hp	200 kW
Continuous power at 3,000 rpm	154 hp	115 kW
Peak torque	664 lbf•ft	900 N•m
Continuous torque	331 lbf•ft	450 N•m
Maximum speed	5500 RPM	
Maximum efficiency	94%	
Power density (based on 200 kW)	1.29 hp/lb	2.12 kW/kg



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DD45-600L Inverter/Controller

Operating Voltage

Nominal input range	360 to 440 VDC
Operating voltage input range	240 to 440 VDC <i>(with derated power output below 360 VDC)</i>
Minimum voltage limit	240 VDC
Input current limitation	600 A

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

Inverter Type

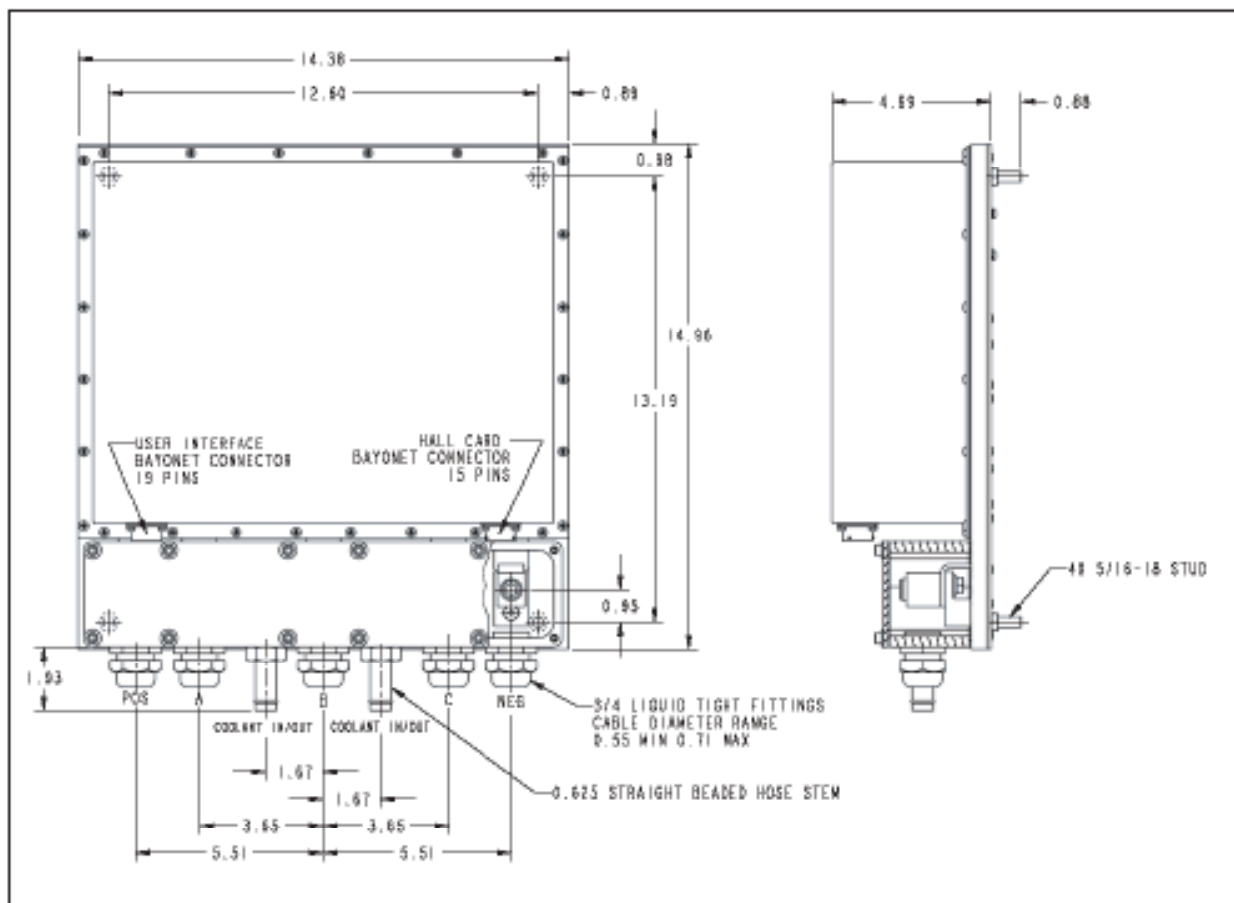
Control type	PWM & phase advance, 3-Phase Brushless PM
Power device	IGBT module half bridge × 3
Switching frequency	12.5 kHz
Standby power consumption	17 W <i>(inverter and microprocessor)</i>

Liquid Cooling System

Minimum coolant flow	7.5 l/min <i>(50/50 water/glycol mix)</i>
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

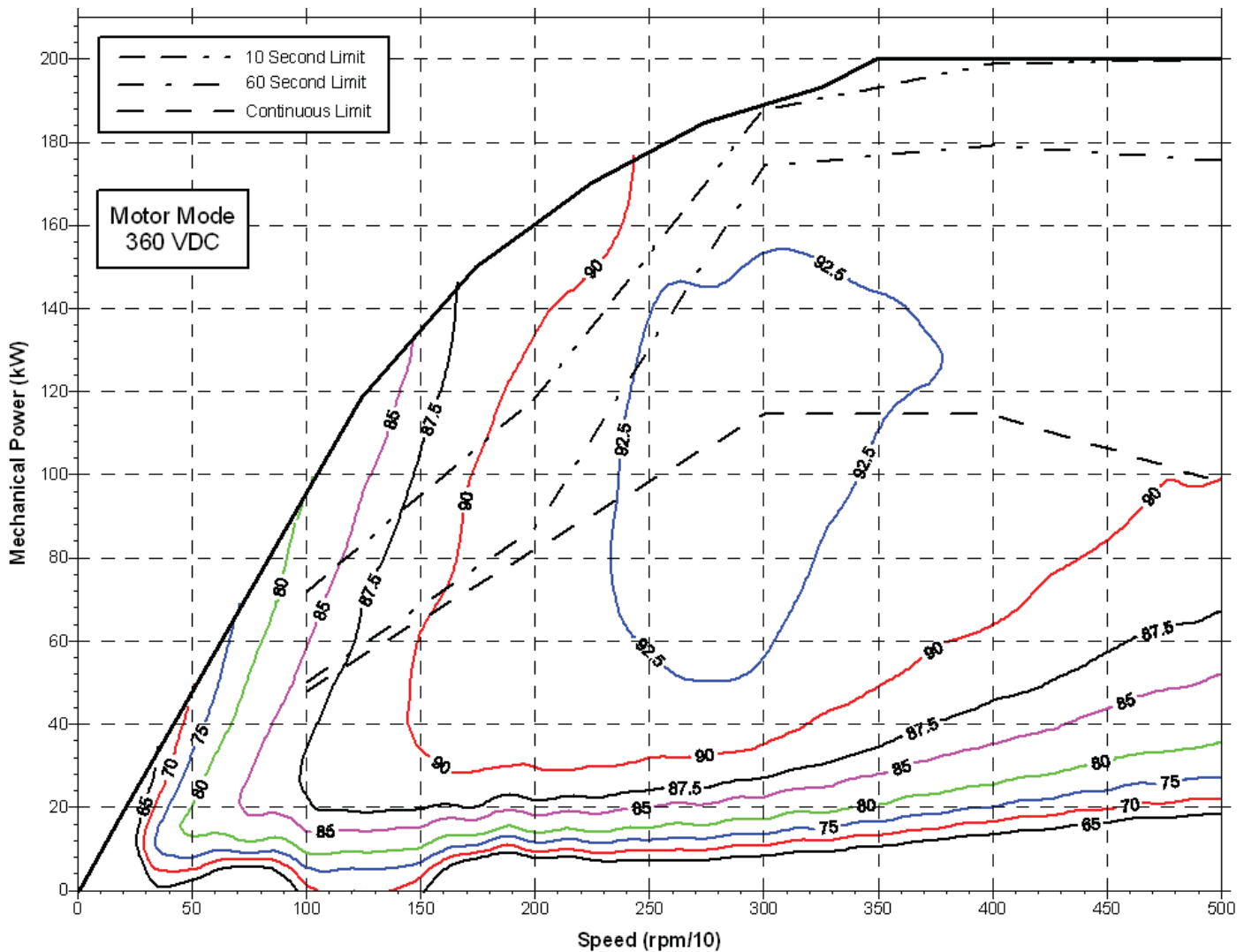
Digital Signal Processor (internally packaged)

Nominal input voltage	12 VDC or 24 VDC
Input supply voltage range	8 to 30 VDC
Input supply current range	0.3 to 0.5 A



PowerPhase[®] 200

Motoring Power Efficiency Map Includes controller and motor

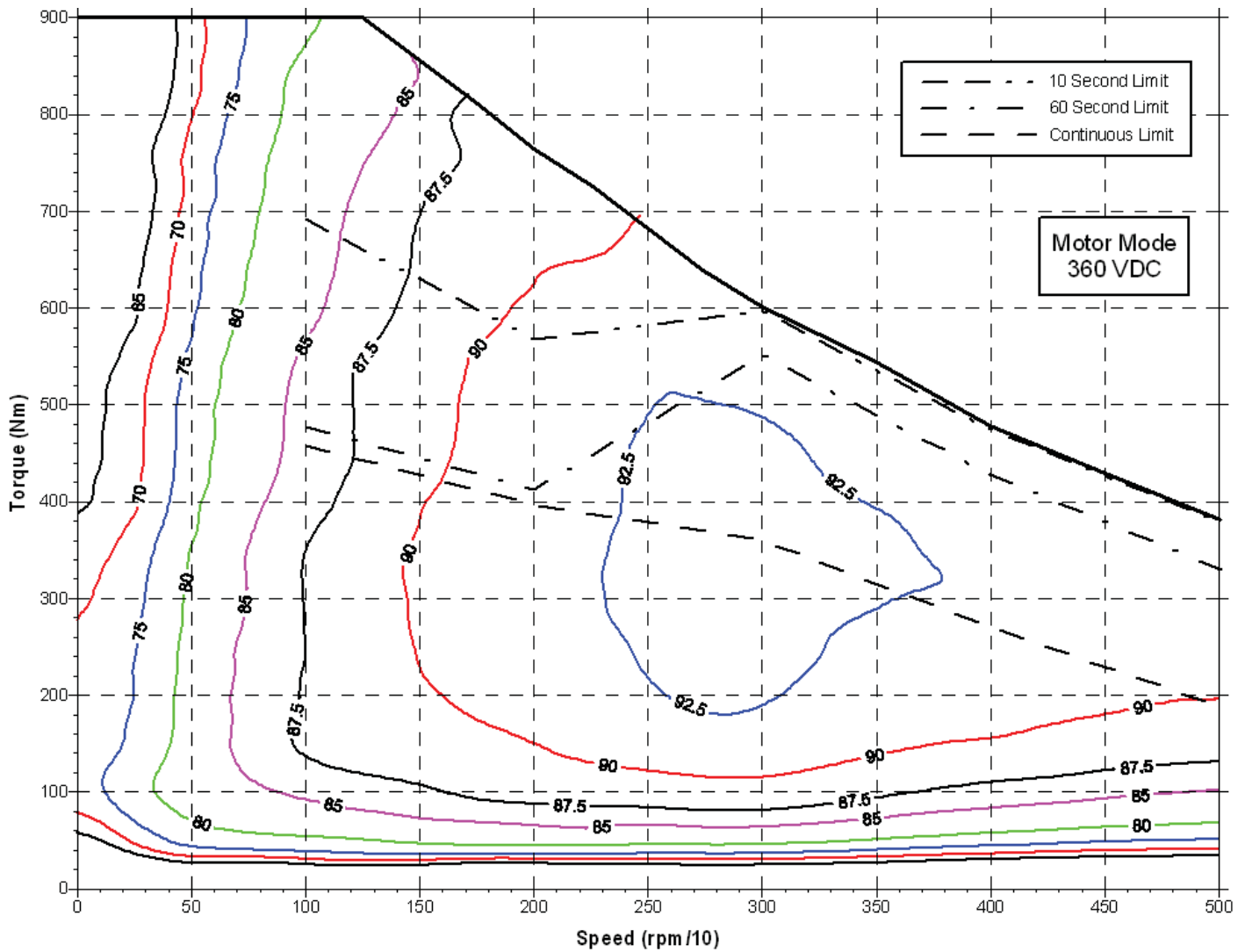


Testing Conditions

Continuous Output: 360 VDC input, 55°C coolant inlet temperature

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Motoring Torque Efficiency Map Includes controller and motor



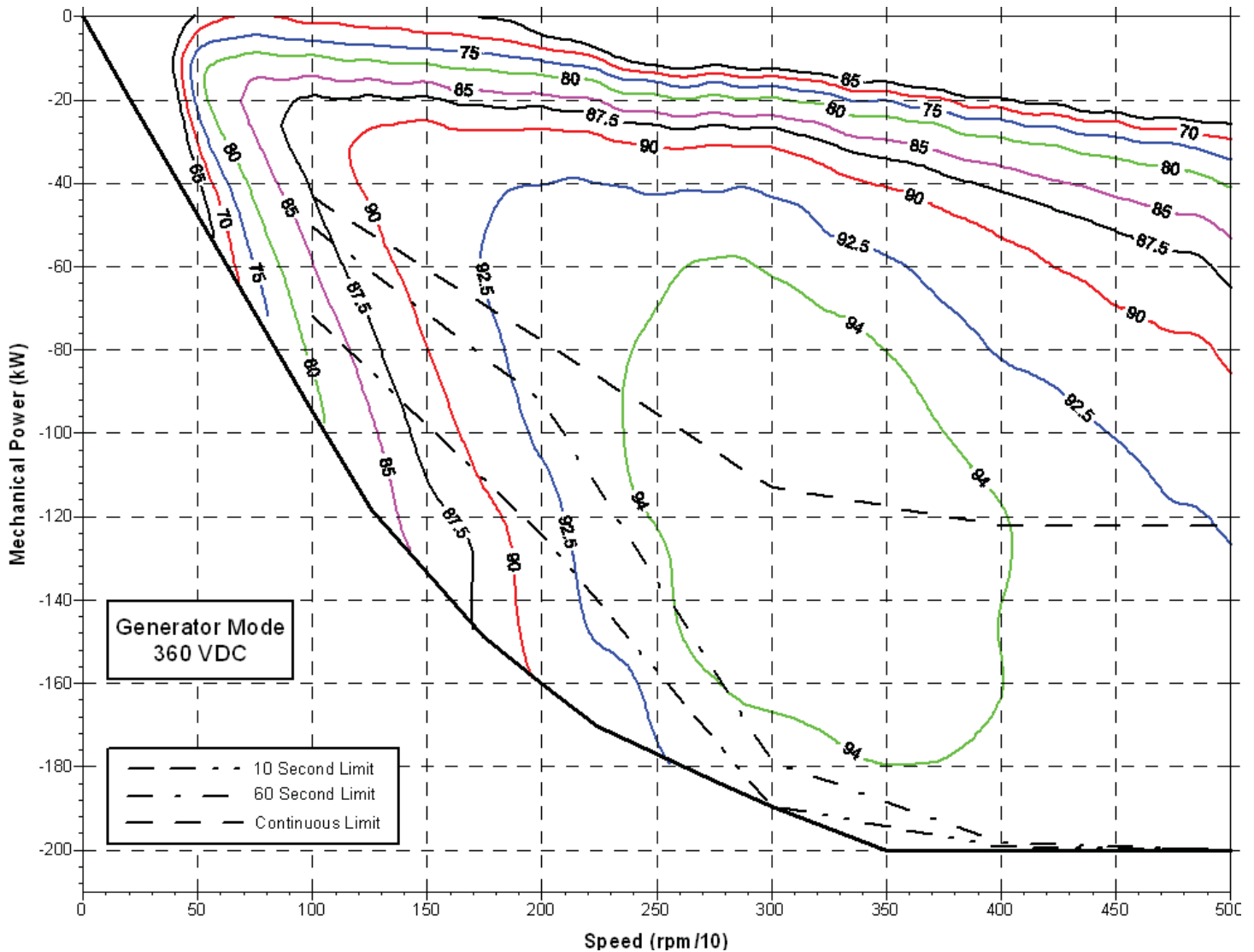
Testing Conditions

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Generating Power Efficiency Map

Includes controller and generator



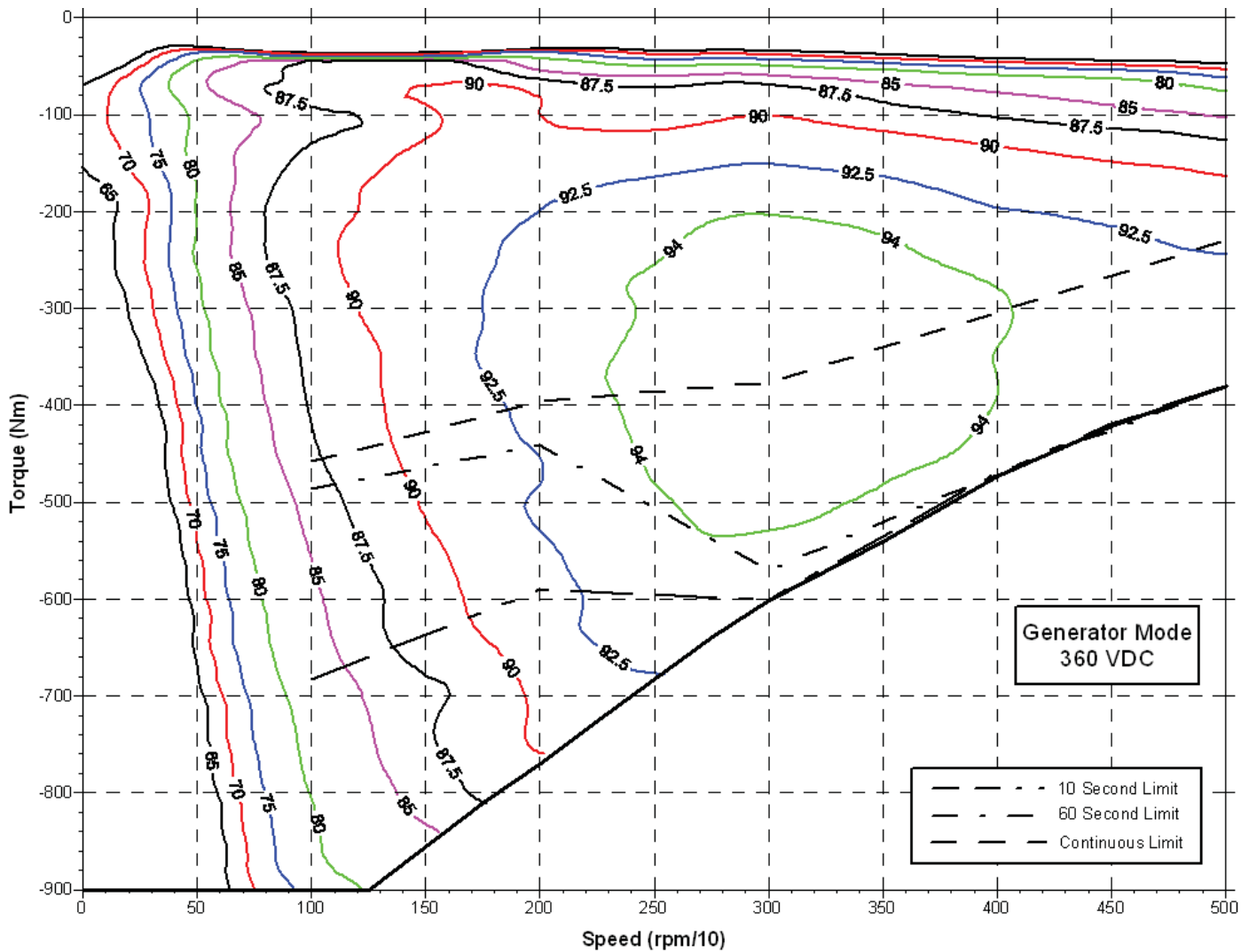
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PowerPhase[®] 200

Generating Power Efficiency Map

Includes controller and generator



Testing Conditions

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