



## ***PowerPhase<sup>®</sup> 125 Traction System***

***For Electric, Hybrid Electric, and Fuel Cell Powered Vehicles***



### ***A reliable design that incorporates:***

- **300 Nm Peak Torque**
- **125 kW peak, 45 kW Continuous Motor Power**
- **125 kW peak, 41 kW Continuous Generator Power**
- **Full Regenerative braking**
- **Full power @ 300-420 VDC input**



SR218N Brushless PM Motor/Generator		
<b>Dimensions</b>		
Length	9.94 in	252 mm
Diameter	11.00 in	280 mm
Weight	90 lb	41 kg
<b>Performance</b>		
Peak power	167 hp	125 kW
Continuous power	60 hp	45 kW
Peak torque	221 lbf-ft	300 N-m
Continuous torque	110 lbf-ft	150 N-m
Maximum speed	8000 RPM	
Maximum efficiency	94%	
Power density (based on 125 kW)	1.85 hp/lb	3.05 kW/kg
DD45-500L Inverter/Controller		
<b>Dimensions</b>		
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
<b>Operating Voltage</b>		
Nominal battery input range	320 to 370 VDC	
Operating voltage input range	300 to 420 VDC	
Minimum voltage limit	180 VDC (with derated power output)	
Input current limitation	500 A	
<b>Inverter Type</b>		
Control type - PWM, 3-phase Brushless PM		
Power device	IGBT module half bridge x 3	
Switching frequency	12.5 kHz	
Standby power consumption	17 W (inverter and microprocessor)	
<b>Liquid Cooling System</b>		
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
T12812 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	

## Key Features

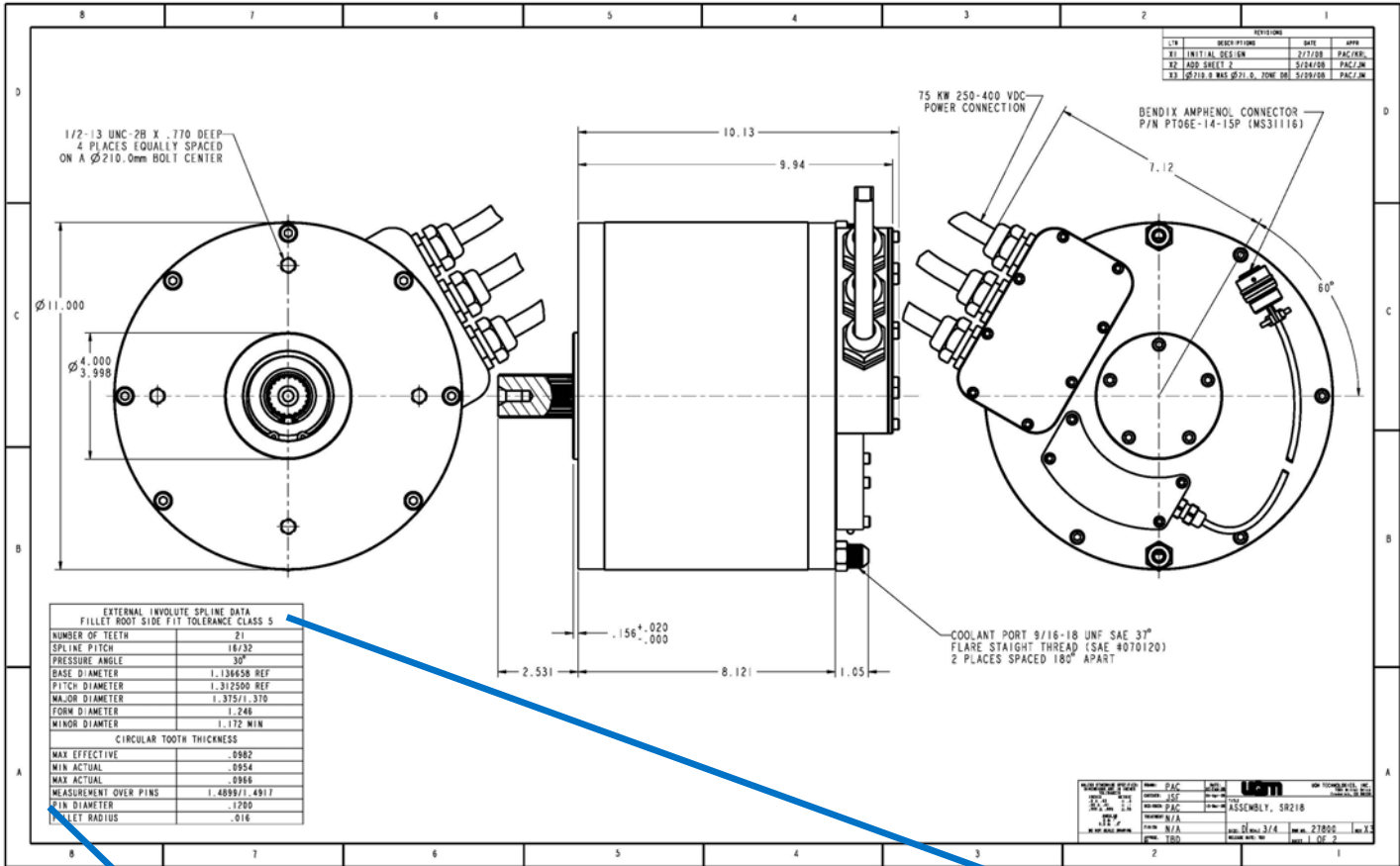
- EV/HEV traction drive or HEV starter/generator system
- 125 kW / 300 N-m
- Efficient, power dense, brushless permanent magnet motor
- User selectable Torque, Speed, or Voltage Control
- DSP-controlled inverter with sine wave drive
- CAN bus compatible
- Liquid cooling
- User/application-friendly interface
- Light weight / Compact

Drive Electronics Incorporate...	
Serial communication	Temperature sensing/alarm
CAN bus compatibility	Speed sensing
Diagnostic capability	IGBT power switches
Digital control signals	Operation configurable for battery management
Software controlled, four quadrant operation	
Features	Benefits
Torque based traction control	Smooth vehicle operation
Regenerative braking (selectable)	Improved braking and extended range
Rugged, weatherproof enclosure	Suitable for automotive applications
Liquid cooling	Enhanced thermal management
Vehicle control software	Customized (optional)

(All data subject to change without notice)



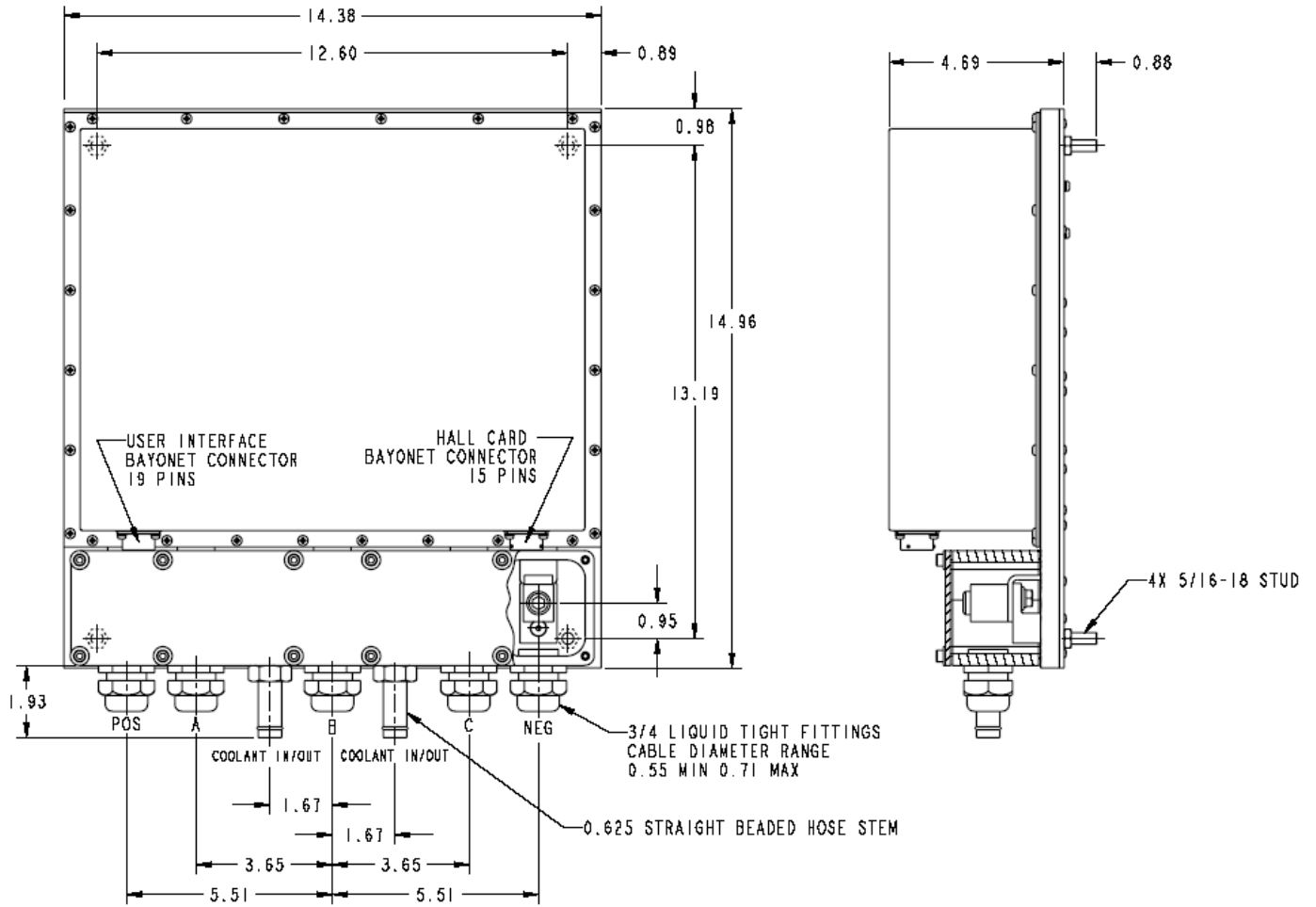
## HPM125 Motor/Generator



EXTERNAL INVOLUTE SPLINE DATA FILLET ROOT SIDE FIT TOLERANCE CLASS 5	
NUMBER OF TEETH	21
SPLINE PITCH	16/32
PRESSURE ANGLE	30°
BASE DIAMETER	1.136658
PITCH DIAMETER	1.312500 REF
MAJOR DIAMETER	1.375/1.370
FORM DIAMETER	1.246
MINOR DIAMETER	1.172 MIN
CIRCULAR TOOTH THICKNESS	
MAX EFFECTIVE	.0982
MIN ACTUAL	.0954
MAX ACTUAL	.0966
MEASUREMENT OVER PINS	1.4899/1.4917
PIN DIAMETER	.1200
FILLET RADIUS	.016

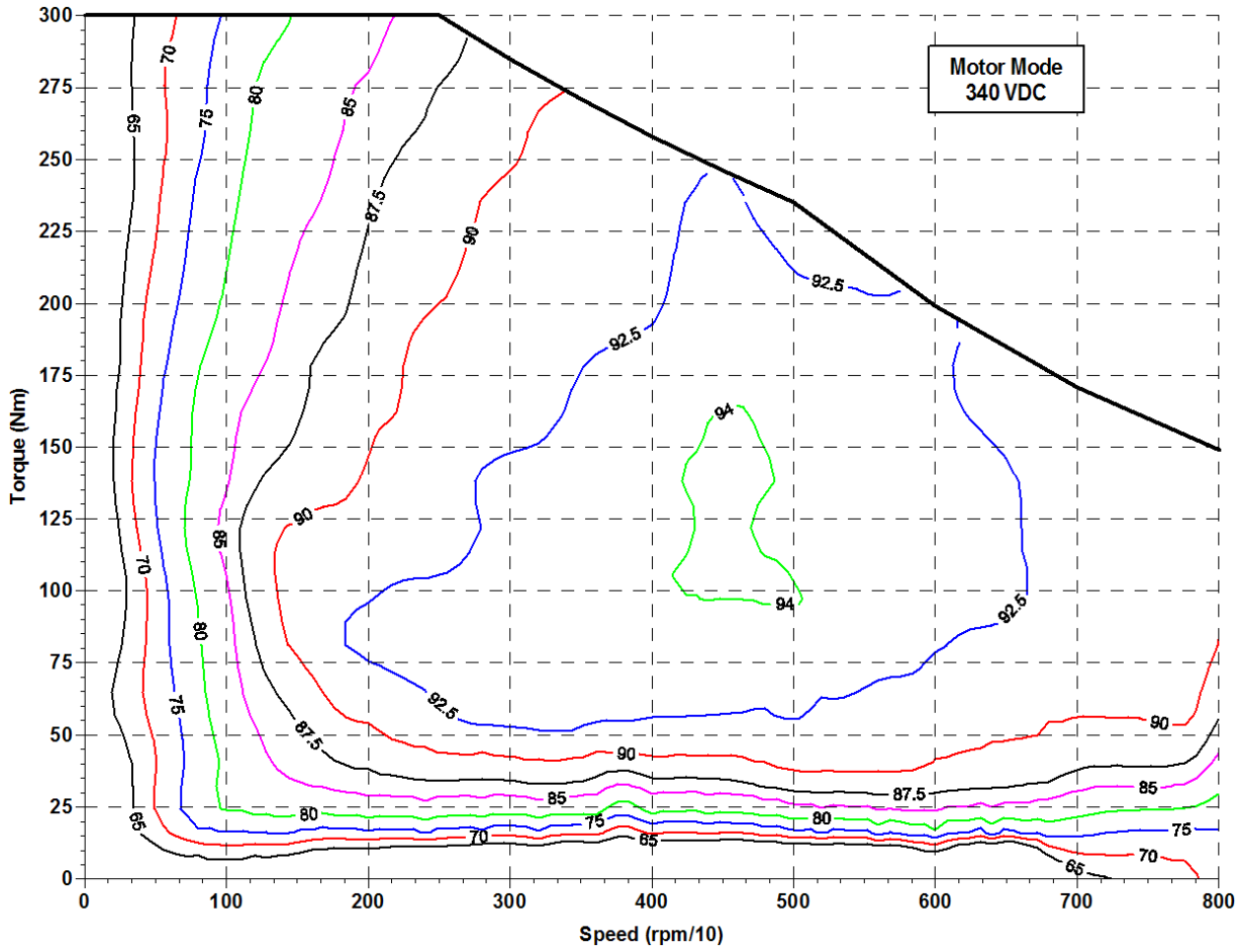


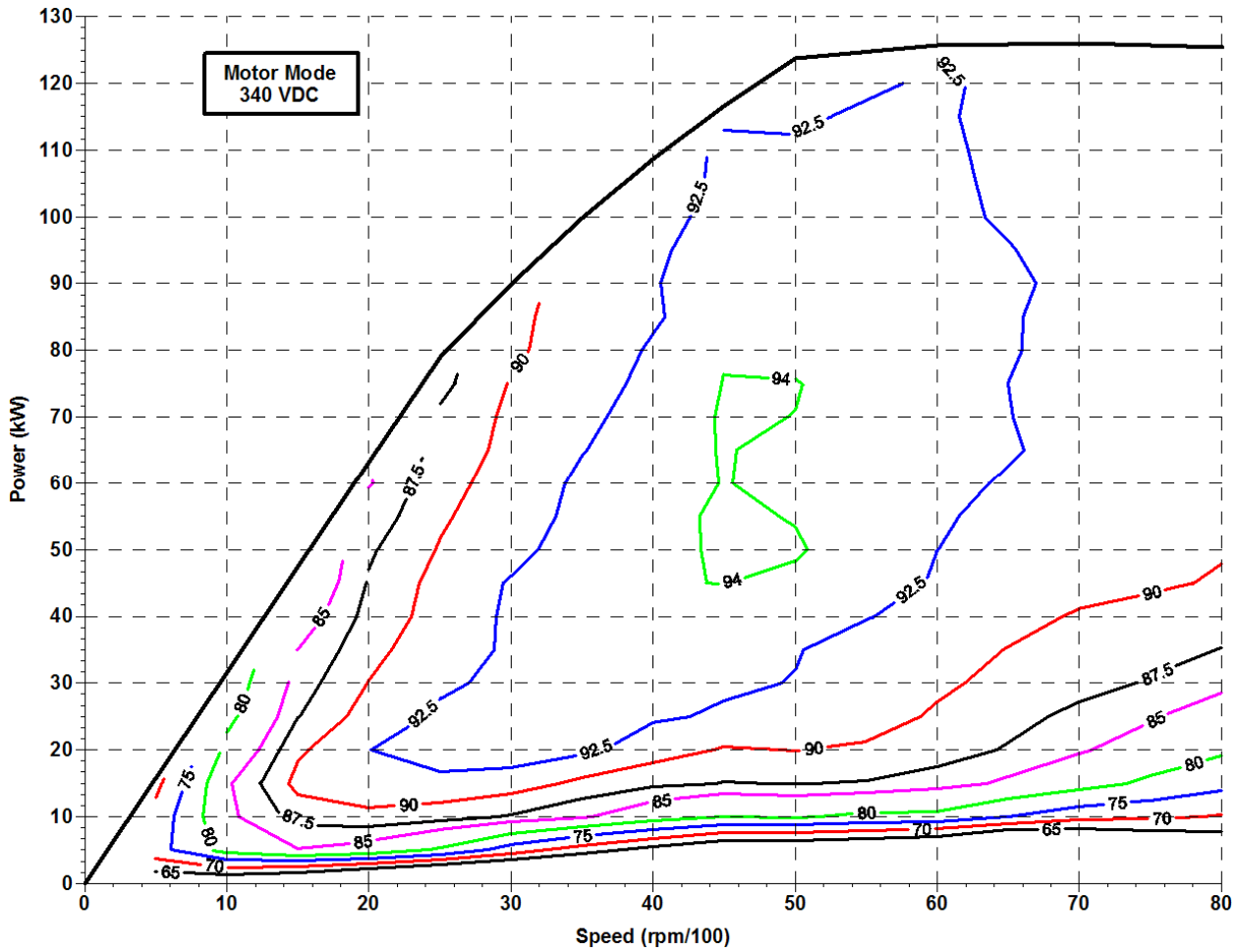
## UQM DD45-500L Inverter-Controller



# PowerPhase<sup>®</sup> 125 Efficiency Maps

## Motoring Mode (From Test Data)





### Testing Conditions

**Continuous Output:** 45 kW at 4000 rpm with 300 VDC input, 55 °C coolant

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