

# Force Drive™ Electric Drive Solutions

## AC24 Motor (& Optional AT1200 Gearbox) with DMOC445 Controller



### Overview

The Azure Dynamics AC24 with DMOC445 Drive System features the Azure AC24 motor with an optional AT1200 gearbox with internal differential. This drive system is designed with front wheel compact sedans in mind. Vehicle conversions are made fast and easy, because this motor/gearbox assembly will easily replace the engine and transmission of many compact front wheel drive vehicles. If direct drive or connection to an existing gearbox or transmission is desired, the AC24 is available without the AT1200 gearbox and with a NEMA C-face.

### Applications & Features

In battery EV applications, the AC24 with DMOC445 drives are designed for use in vehicles weighing from 1,000 to 3,500 lbs. The optional gearbox provides a 10:1 overall vehicle drive ratio with differential included. Mating half shafts are also available.

#### AC24 Motor

- High-efficiency air-cooled AC induction motor
- Sealed motor and gearbox casings
- Compact, lightweight construction
- Low rotating losses and motor electrical resistance

#### Optional AT1200 Gearbox

- Precision ground helical gears for quiet operation and long system life

### DMOC445 Digital Motor Controller

Azure's DMOC445 is a DSP-controlled, rugged, waterproof (except for cooling fans) inverter for controlling 3-phase AC motors and generators. Liquid-cooling is available.

- DSP-based control
- Regenerative braking
- Space Vector PWM and Field Oriented Control
- Internal contactor with pre charge circuitry
- Speedometer driver for some dashboard displays/gauges (such as VDO) and brake light enable
- Lightweight aluminum chassis
- Waterproof, rugged construction
- Trenchgate IGBTs for maximum efficiency
- Over voltage and under voltage protection
- Three-level over current protection
  - >10KHz DSP-based current control
  - >Analog over current watchdog
  - >"Desat" protection at gate level
- Inverter over temperature protection
- Motor over temperature protection
- Over speed torque limit
- Invalid pedal signal detection
- RS232 – for diagnostics and data visualization
- CAN – for communications with other components

### Specifications

Motor Winding Configuration	@156VDC		@336VDC
	delta	wye	
Peak Torque	Nm	75	82
Continuous Torque	Nm	31@4000 RPM	38@4700 RPM
Nominal Speed	Rpm	4000	4700
Maximum Speed Powered	Rpm	11000	11000
Maximum Mechanical Speed	Rpm	12000	12000
Maximum Current	A DC	240	150
Continuous Power	kW	13	17
Peak Efficiency	%	89	91
Peak Electrical Power	kW	37	47
AC24 Weight	Kg	38	
DMOC445 Weight	Kg	15	
AT1200 Weight	Kg	18	
Diameter AC24	mm	244	
Length AC24 with Cface (Cface mating surface to endbell)	mm	320	
Length AC24 with gearbox (endbell to endbell)	mm	293	
Length AT1200	mm	438	
Width AT1200	mm	216	
Height AT1200	mm	488	
Length DMOC445	mm	450	
Width DMOC445	mm	226	
Height DMOC445 (with fan)	mm	238	
Minimum Recommended Nominal Battery Voltage	VDC	156	
Maximum Nominal Battery Voltage	VDC	336	
Minimum Operational Voltage	VDC	100	
Maximum Operational Voltage	VDC	400	
Maximum Voltage "On Charge"	VDC	450	
Minimum/Maximum Operating Temperatures	°C	-40 to 55	

Testing performed at 30°C

System design and application affect performance. These specifications are guidelines to help facilitate system design and application and are not guaranteed in any particular application. All specifications are subject to change without notice.



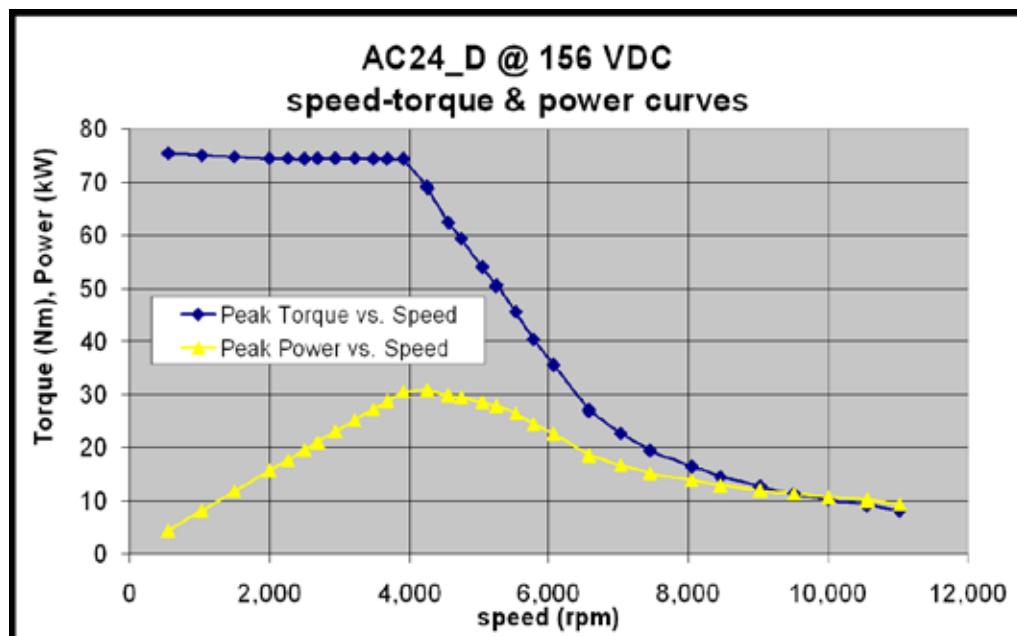
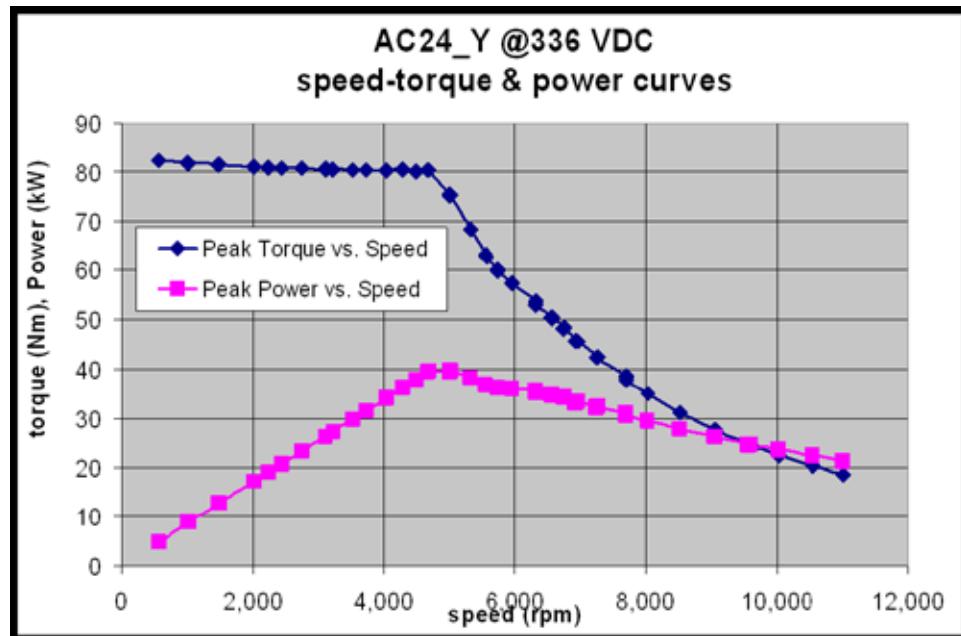
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For further information on AZD's Force Drive Systems contact Beth Silverman, Sales Manager  
781.932.9009 Ext. 6224 [sales@azuredynamics.com](mailto:sales@azuredynamics.com) or call toll free 877.932.9009

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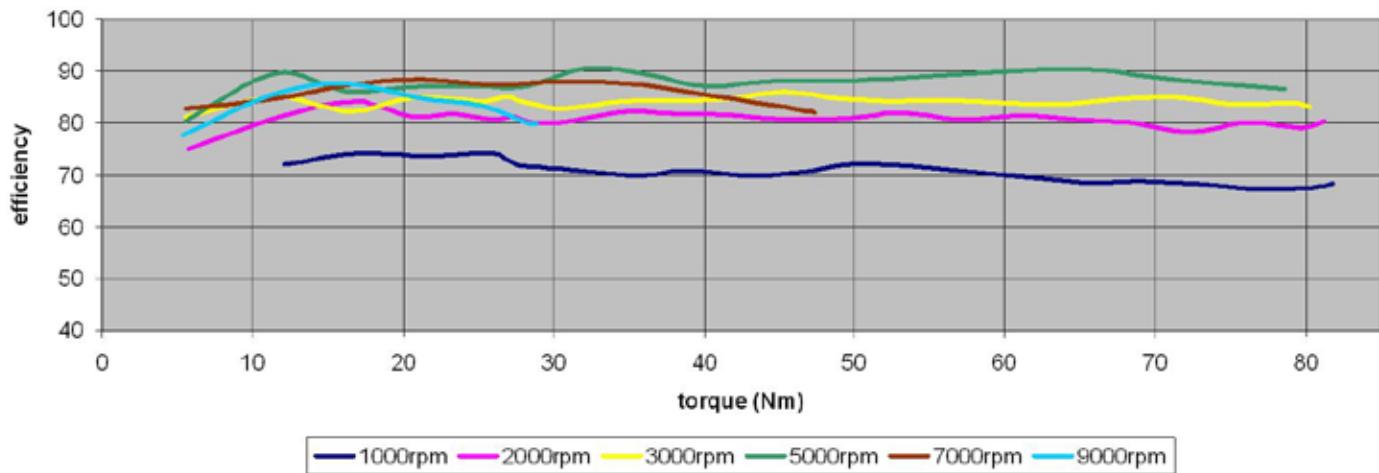
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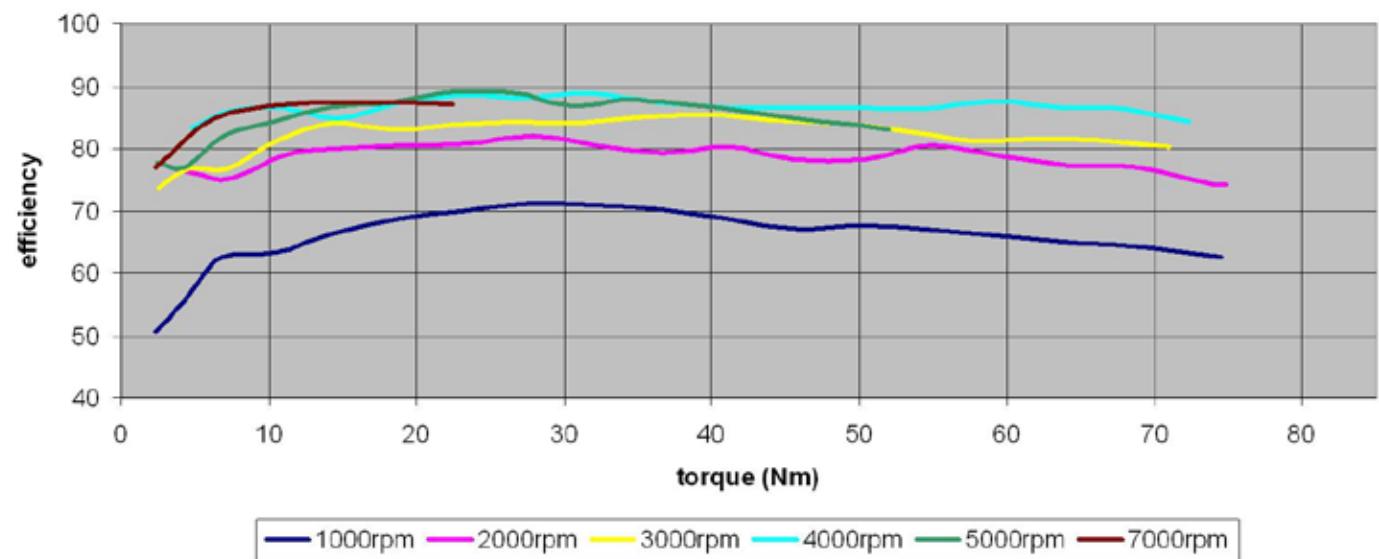
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AC24 wye efficiency 336V nominal



AC24 delta efficiency 156V nominal

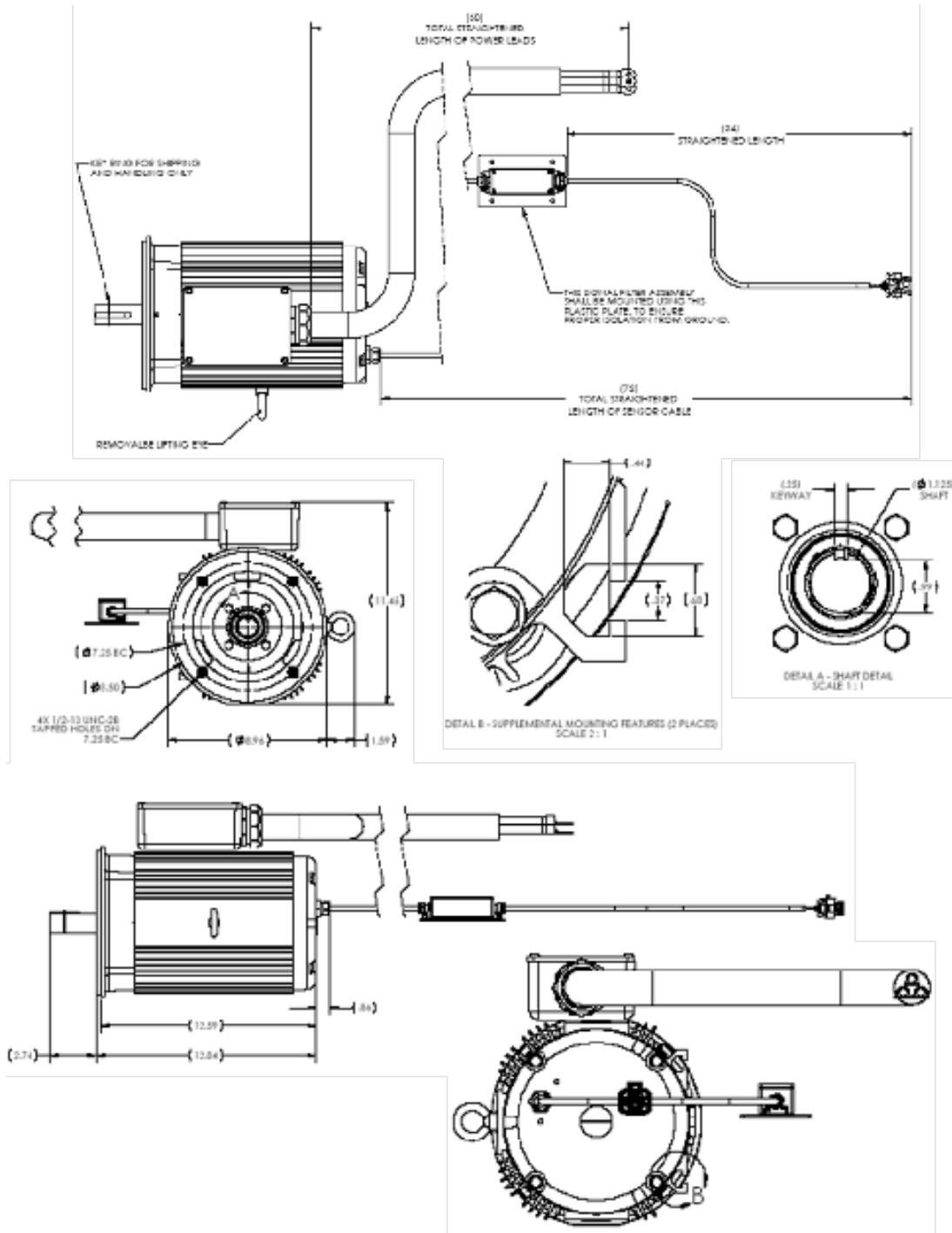


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## AC24 Motor



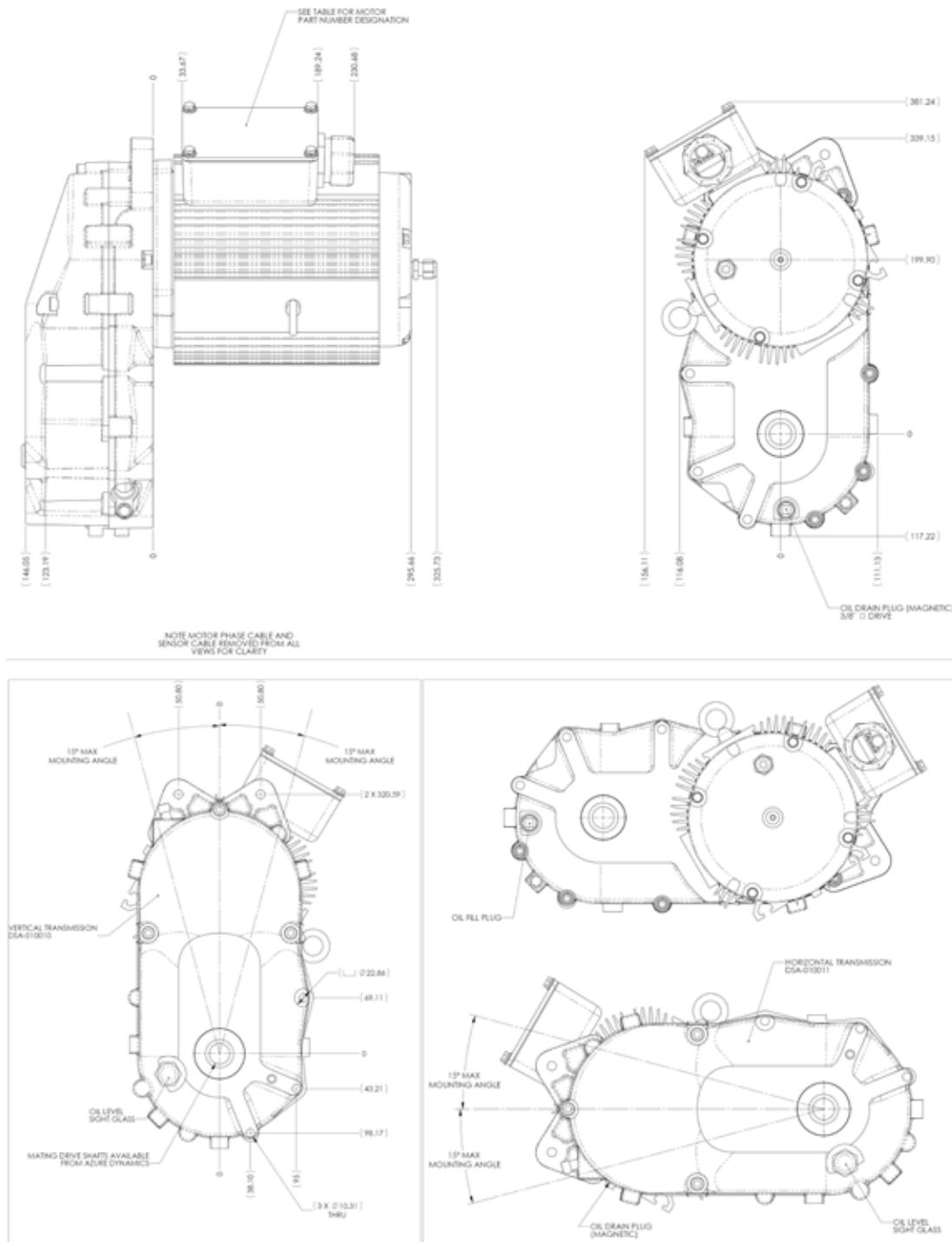
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## AT1200 Gearbox



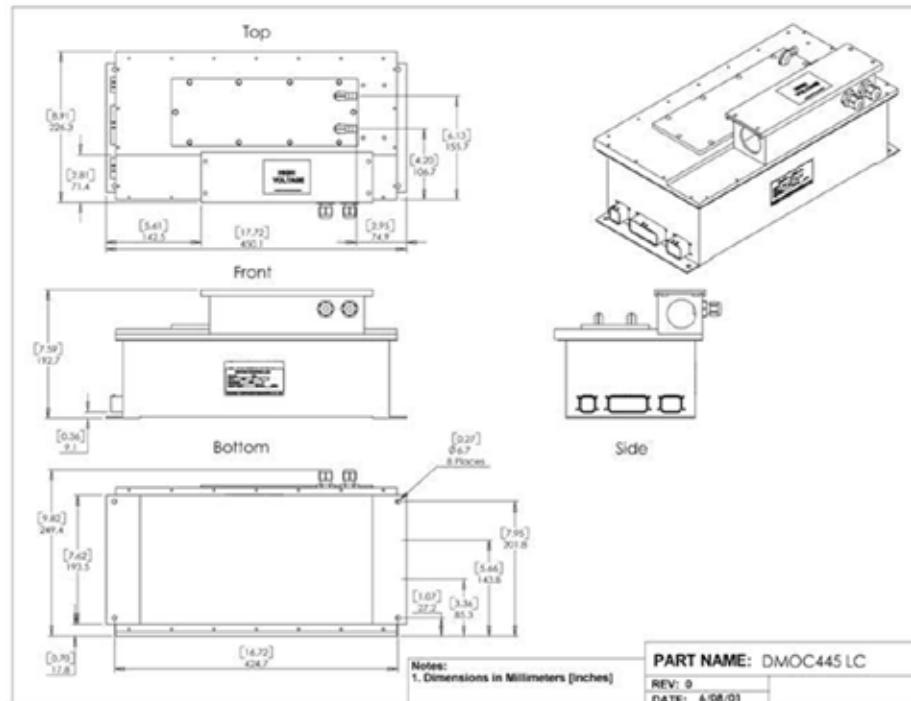
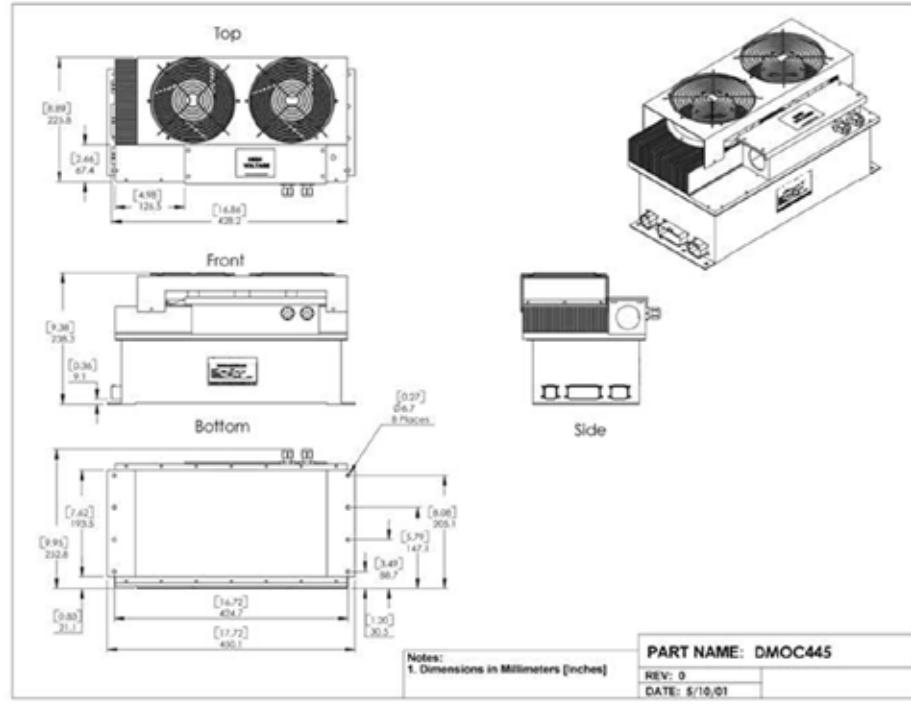
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## DMOC445 Controller



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