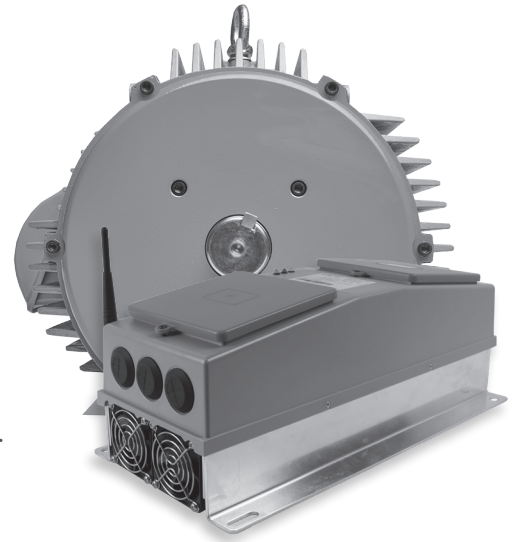


Turntide™ Smart Motor System: V03 (15 HP)

The Turntide Smart Motor System delivers unprecedented energy efficiency in a highly reliable switched reluctance design. This software-driven motor solution includes a Smart Motor and Motor Controller, complete with networking and connection capabilities to Turntide Cloud™. The patented Turntide Motor System is proven to significantly reduce energy consumption, dramatically reducing energy costs and carbon footprint resulting from electric motor operation.

The V03 motor is suitable for a range of new and retrofit HVAC, refrigeration, and pumping applications in both fixed and variable speed.



Turntide Smart Motor System

FEATURES	SMART MOTOR SYSTEM BENEFITS
Turntide Cascade® - PC graphic-based programming tool, part of the Turntide Controls Platform	Provides for customization to assure your motor control sequences can be accomplished for every application.
Configurable sequence of operation based on internal and external sensor feedback using up to 18 integrated I/O points	Reduces hardware needed to control HVAC and other equipment, reducing overall cost of system implementation.
Safe DC bus discharge	Ensures internal voltages of the Turntide Motor Controller are rapidly discharged for safe service and maintenance immediately after power down
Turntide Cloud	Provides monitoring and remote reporting, enabling extended data logging and alerts and alarms based on selectable parameters, protecting equipment and assuring the most efficient operation.
Built-in soft start and brownout protection	Eliminates nuisance service calls and interruptions to building operation due to inadvertent circuit breaker trips, reducing maintenance costs.

Motor System Characteristics

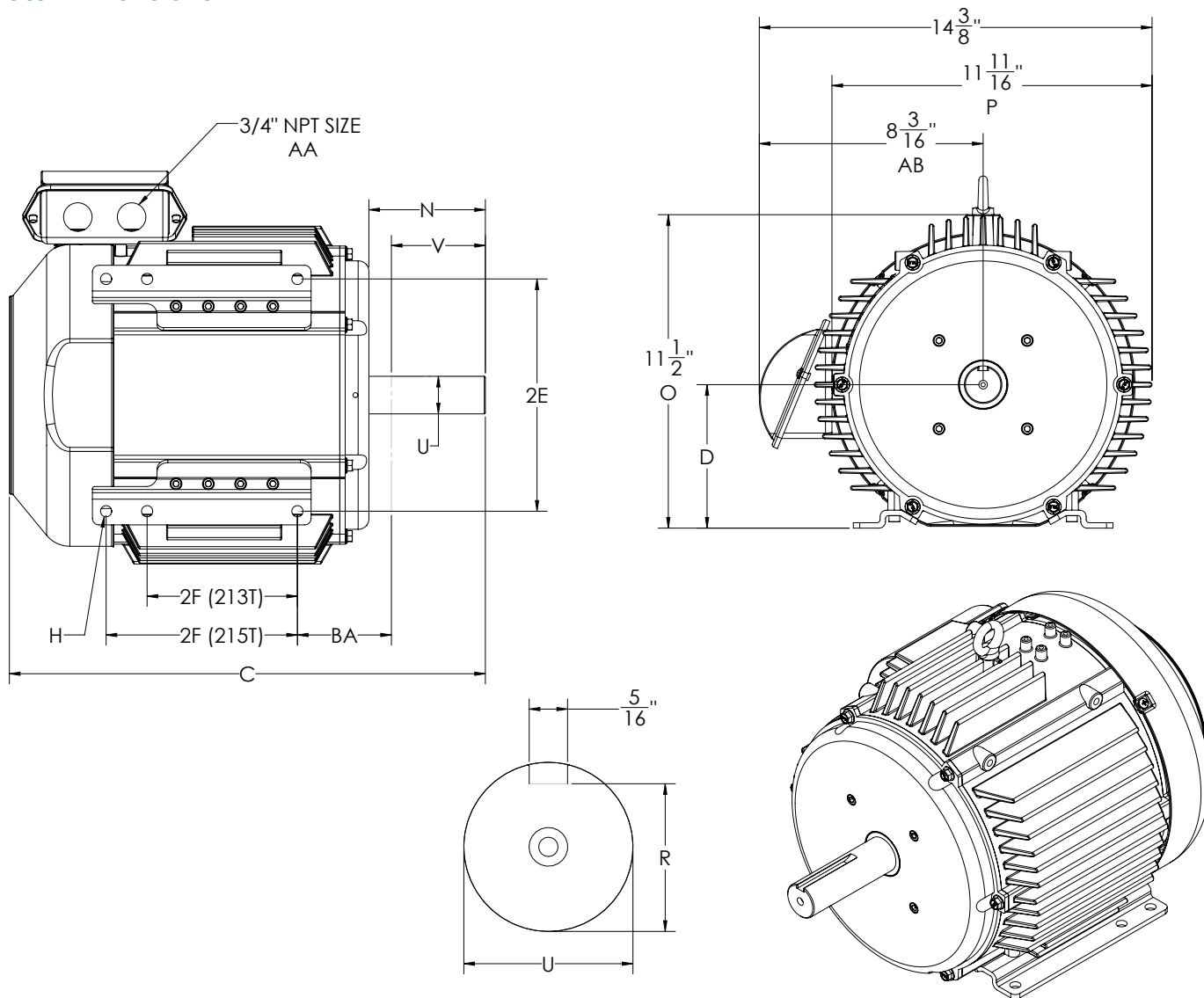
Motor Model SKU	V03-1500-4-H00	Motor Controller Model SKU	P05H	P05HC
Rated Power	15 HP / 11.19 kW	Supply Voltage	480 VAC (P05H)	575VAC (P05HC)
Rated Service Factor	1.15	Supply Frequency	60 Hz	
Rated RPM	1800 RPM	Supply Phase	3-Phase	
Operating RPM	300-3600 RPM	Power Factor	0.39-0.48 across operating range	
Peak Motor Efficiency	94.5%	Peak System Efficiency	92.7%	
Motor Duty Rating	Continuous	Controller to Motor Power Wire	10 AWG	
Insulation Class	F	Ambient Temperature Range	-10°C to +40°C	
Rotor Inertia	0.100 lb-ft ² (0.0042 kg-m ²)	Relative Humidity	95%, non-condensing	
Motor Enclosure	TEFC	Motor Controller Ingress Protection	IP65 Rating	
Motor Frame Size	213T/215T	Motor Ingress Protection	IP20 Rating	
Motor Weight	151 lb (68.5 kg)	Motor Controller Weight	10.5 lb (4.8 kg)	



Certified to CSA STD C22.2#77, CSA C22.2#274, & IEC 61800-3 and conforms to UL STD UL 61800-5-1, UL 61800-5-2, and UL 1004-7



Motor Dimensions



Dimension Table (in inches)

NEMA	D	E	2F	H	U	V	BA	C
213T	5 ¼	4 ¼	5 ½	13/32	1 ⅜	3 ⅜	3 ½	17 7/16
215T			7					

Definitions:

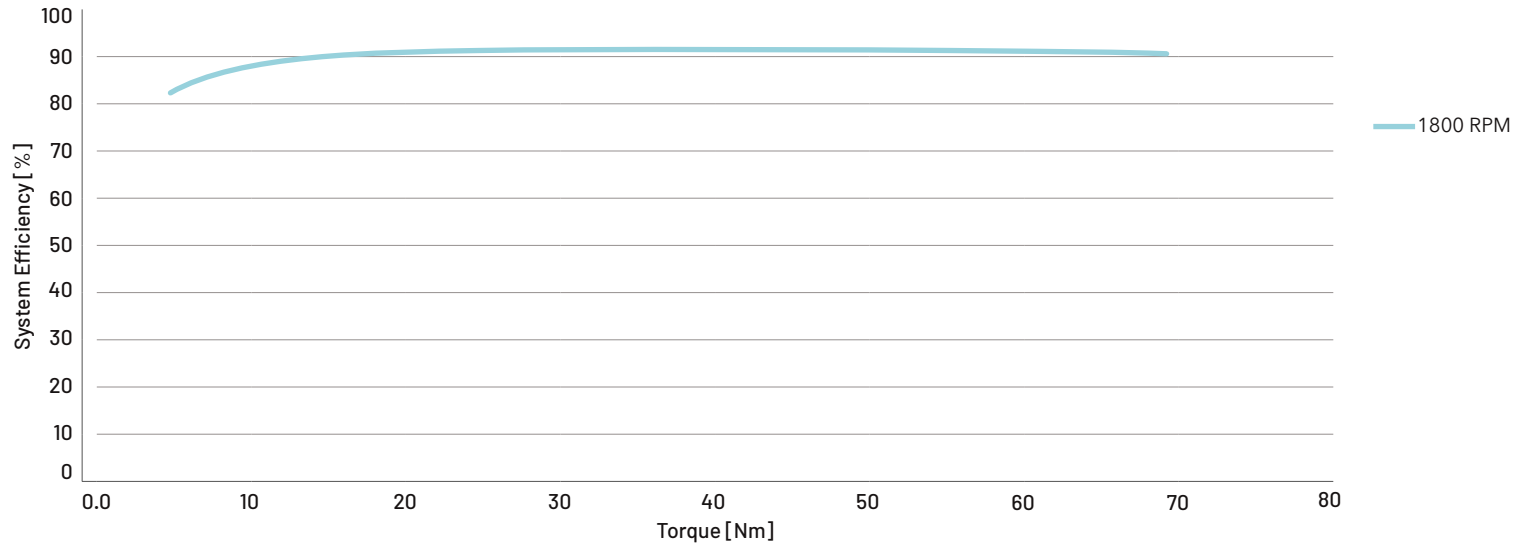
- D - height of shaft
- E - 1/2 distance between foot holes side-to-side
- 2F - distance between foot holes front to back
- H - foot hole size
- U - shaft diameter
- V - shaft length
- BA - distance from front foot hole to back of shaft horizontally
- C - Overall length

Motor Mounting

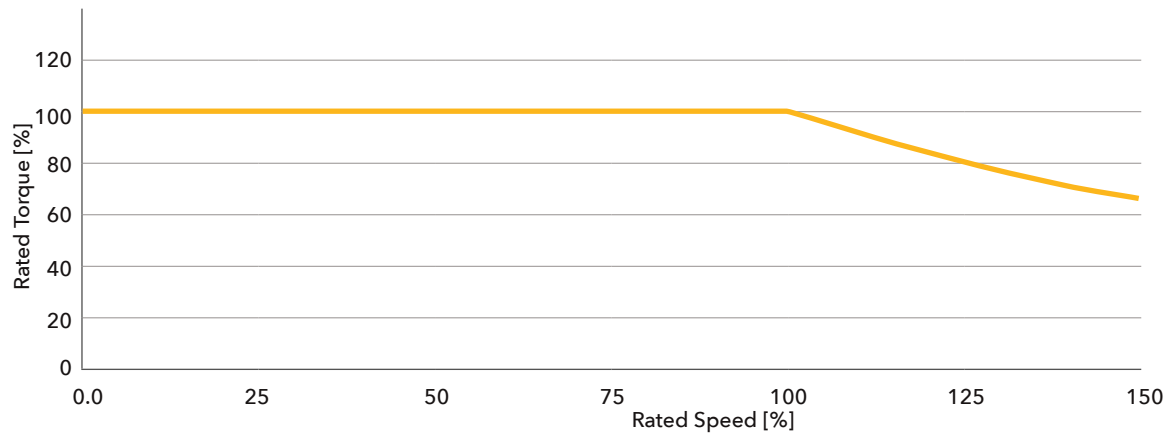
Securely install motor with 3/8 inch bolts to a firm, rigid mounting surface with minimum vibration to establish good alignment with the driven load and the motor shaft. Proper alignment of the coupling mechanism with the motor shaft is critical to minimize vibration and maximize equipment life.



System Efficiency vs Torque



Torque-Speed Curve



Motor Name Plate

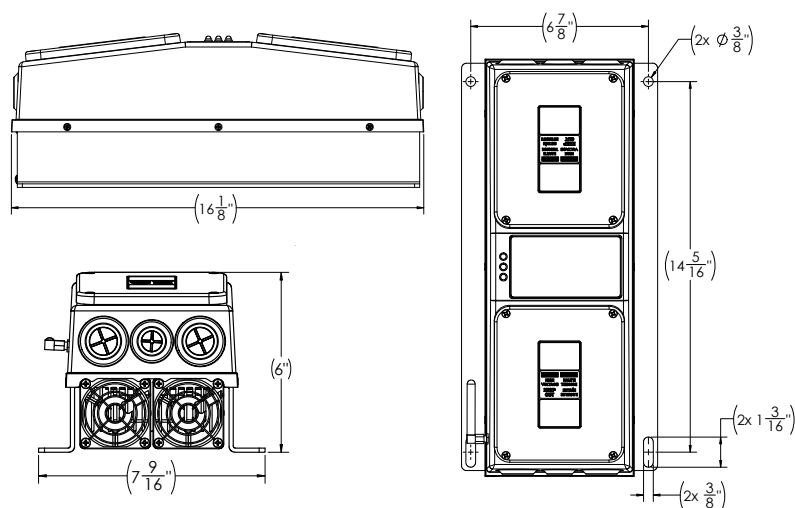
<p>SMC SOFTWARE MOTOR COMPANY</p>	<p>SMC Smart Motor HR-SRM Motors www.softwaremotor.com</p>
	<p>OUTPUT.....15.0hp/5.60-7.46kW at 1800 RPM</p> <p>MODEL.....V03-1500-4-H00 AMPS..... 20A</p> <p>VOLTAGE.....680 VDC ENCLOSURE.....TEFC</p> <p>SERVICE FACTOR.....1.15</p> <p>PEAK EFFICIENCY.....94.5%</p> <p>FRAME.....213T/215T</p> <p>MAX AMB.....40°C</p> <p>INSULATION CLASS.....F</p> <p>DUTY.....Continuous</p>
<p>Certified to CSA C22.2#77 Conforms to UL 1004-7</p> <p>U.S. Pat. Nos. at https://softwaremotor.com/patents</p> <p>WARNING: This motor may only be operated using supplied SMC Motor Controller.</p> <p>AVERTISSEMENT: Ce moteur doit être utilisé avec le contrôleur de moteur SMC fourni. On Peut pas utiliser un autre contrôleur.</p>	<p>Made in China</p> <p>LISTED</p> <p>Intertek 5003619</p>



Turntide Motor Controller

The Turntide Motor Controller controls all operations of the Smart Motor and is required for motor operation. Its internal program assures that the motor is operating at the highest efficiency at any speed in any application. It does this by monitoring the internal sensors and feedback from the Smart motor and adjusting control signals for optimization. The Motor Controller provides physical connection for 16 input and output connections for control and monitoring of associated equipment such as RTUs, AHUs and pumps. The Motor Controller can be configured with Cascade software to operate under an infinite number of control scenarios. When connected with the Turntide supervisor, remote configuration, updates, alerts, alarms, and system data logging can be delivered through Turntide Cloud or a BMS system.

Motor Controller Dimensions (in inches)



Motor Controller Mounting

Securely install the motor controller to a solid mounting surface with 3/8 inch bolts using the four screw holes and slots in tabs on the base.

Indemnity

The information in this document is subject to change without notice and should not be construed as a commitment by Turntide Technologies or Software Motor Company. Turntide Technologies assumes no responsibility for any errors that may appear in this document. In no event shall Turntide Technologies be liable for incidental or consequential damages arising from use of this document or the software and hardware described in this document.



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sales@turntide.com

Turntide Technologies (formerly Software Motor Company) has developed the world's most efficient and intelligent electric motor system. The revolutionary Smart Motor System is based on proven switched reluctance technology, now managed with advanced cloud software and connected to precise controls via IoT. Turntide's vision is to eliminate the 25% of global electricity consumption that is wasted by legacy motors, thus accelerating the world's transition from fossil fuels. Turntide is based in Sunnyvale, Calif., with offices in San Francisco; Arlington, Wash.; and Kennesaw, Ga. Turntide has installed Smart Motor Systems with dozens of customers, reducing their motor electricity consumption by an average of 64%, and is powering the systems of leading OEMs. For further information, visit www.turntide.com.

POWER IS VALUABLE. USE IT INTELLIGENTLY.

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Motor Controller I/O

QTY	Description
7	Programmable digital inputs
1	Programmable voltage output: 0-10, 10mA limit
4	Relay outputs: 1A, 125VAC limit
4	Universal inputs, individually selectable as: <ul style="list-style-type: none"> Voltage Mode: 0-10V Current Mode: 0-20mA; or 4-20mA Resistive Mode External Logic Mode

Motor Controller Name Plates

SMC Motor Controller
HR-SRM Motors
www.softwaremotor.com

MODEL P05H
MOTOR V02 / V03

INPUT	VOLTS 3PH	CURRENT			
		5 HP (V02)		7.5-15 HP (V03)	
	208/230 VAC	14-16A	60 Hz	60 Hz	50 Hz
	460 VAC	9A		6-17.5A	
	200/240 VAC		13.5-18.5A		
	380/415 VAC		7-9A		11-21.5A

OUTPUT 3PH 280-680VDC
MAX HP 15.0

Conforms to UL STD 61800-5-1 and 61800-5-2
Certified to CSA STD C22.2#274
WARNING: This SMC Motor Controller will only operate stated SMC Smart Motor.

AVERTISSEMENT: Ce contrôleur de moteur SMC doit être utilisé qu'avec moteur de la série de intelligent SMC.

LISTED

Intertek
5003619

Made in China

SMC Motor Controller
HR-SRM Motors
www.softwaremotor.com

MODEL P05HC
MOTOR V02 / V03

INPUT	VOLTS 3PH	CURRENT		
		5 HP (V02)	15 HP (V03)	
	460 VAC 60Hz	9A	17.5A	
	575 VAC 60Hz	6A	16A	

OUTPUT 3PH 680-850VDC
MAX HP 15.0

Conforms to UL STD 61800-5-1 and 61800-5-2
Certified to CSA STD C22.2#274
WARNING: This SMC Motor Controller will only operate stated SMC Smart Motor.

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