

Turntide Smart Motor System™: V01 IEC (1.1 – 2.2 kW)



The Turntide Smart Motor System delivers unprecedented energy efficiency in a highly reliable switched reluctance design. This software-driven motor solution includes the Turntide Smart Motor and the Turntide 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 Turntide V01 IEC motors are suitable for a range of new and retrofit HVAC, refrigeration, and pumping applications in both fixed and variable speed.

Turntide Smart Motor System

Features	Turntide 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 16 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
“Fail Safe” mode	Keeps the Turntide Smart Motor running during phase loss, ensuring continuous operation and minimum downtime.
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.

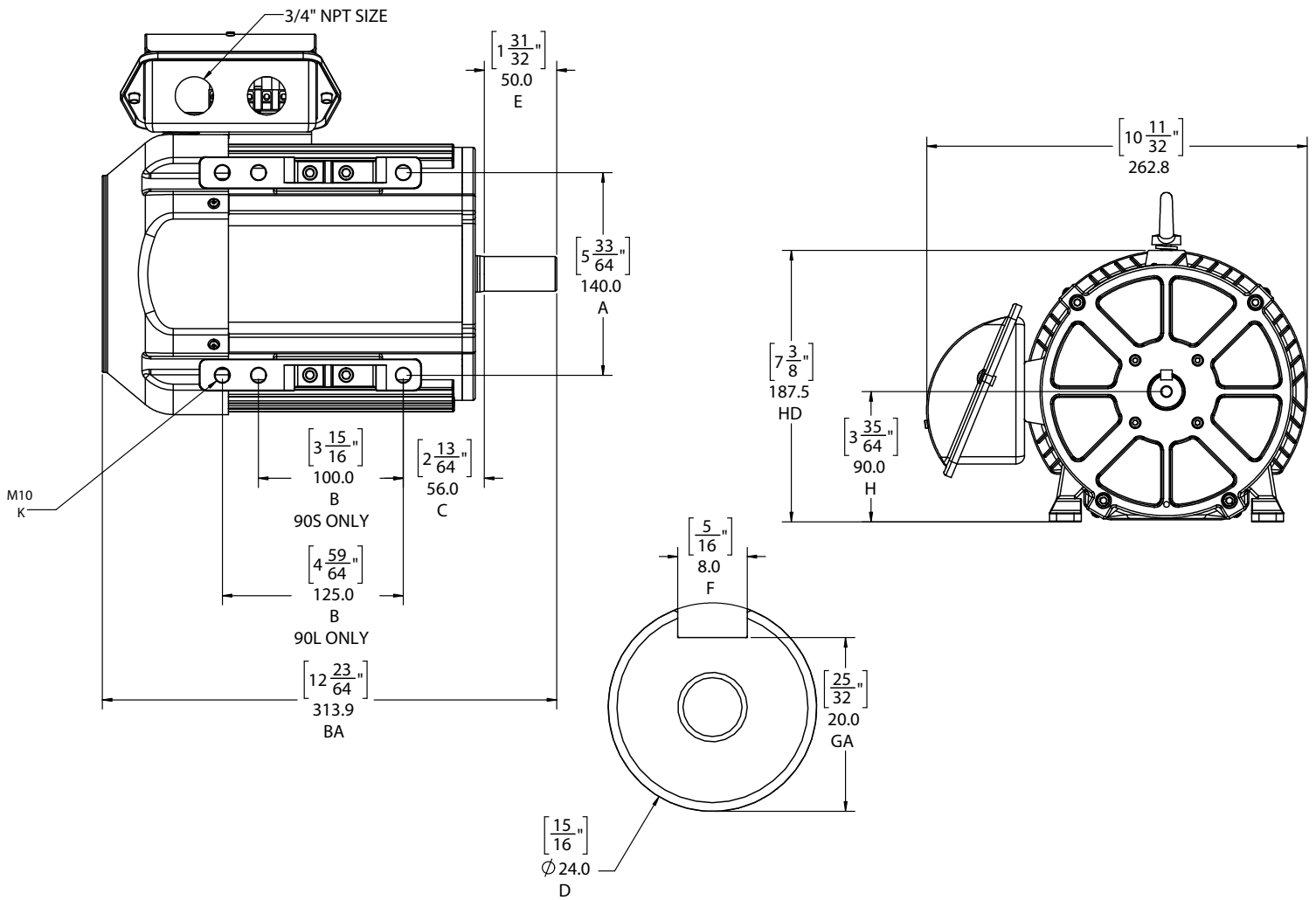
Motor System Characteristics

Motor Model SKU	V01-0150-2-ID00	V01-0200-2-ID00	V01-0300-2-IE00 V01-0300-2-IF00	Supply Voltage/Frequency	200-240VAC		
	V01-0150-4-ID00	V01-0200-4-ID00	V01-0300-4-IE00 V01-0300-4-IF00		380-415VAC		
	Motor Controller Model	P04W			Supply Frequency	50 Hz	
	Rated Power	1.1 kW / 1.5 HP	1.5 kW / 2 HP		2.2 kW / 3 HP	Motor Duty Rating	Continuous
Rated RPM	1500 RPM			Motor Ingress Protection	IP20 Rating		
Rated Service Factor	1.15		1.15 (-2) / 1.00 (-4)	Motor Controller Ingress Protection	IP20 Rating		
Operating RPM	300-3000 RPM			Rotor Inertia	0.100 lb-ft ² (0.0042 kg-m ²)		
Peak System Efficiency	87.9%	89.1%	87.9%	Motor to Controller Power Wire	14 AWG		
Peak Motor Efficiency	91.0%	91.4%	89.8%	Insulation Class	F		
Supply Phase	3-Phase			Ambient Temperature Range	-10°C to +40°C		
Power Factor	0.65-0.80 across operating range			Relative Humidity	95%, non-condensing		
Motor Enclosure	TEFC			Motor Controller Weight	3.2 kg (7.0 lb)		
IEC Motor Frame Sizes	90S / 90L		100L (-IE00) / 112S (-F00)	Motor Weight	24.5 kg (54 lb)		



Certified to IEC 60204-1, IEC 60034-1, IEC 61800-5-1, IEC 61800-5-2, IEC 61800-3, and IEC 61000-4-5

Motor Dimensions

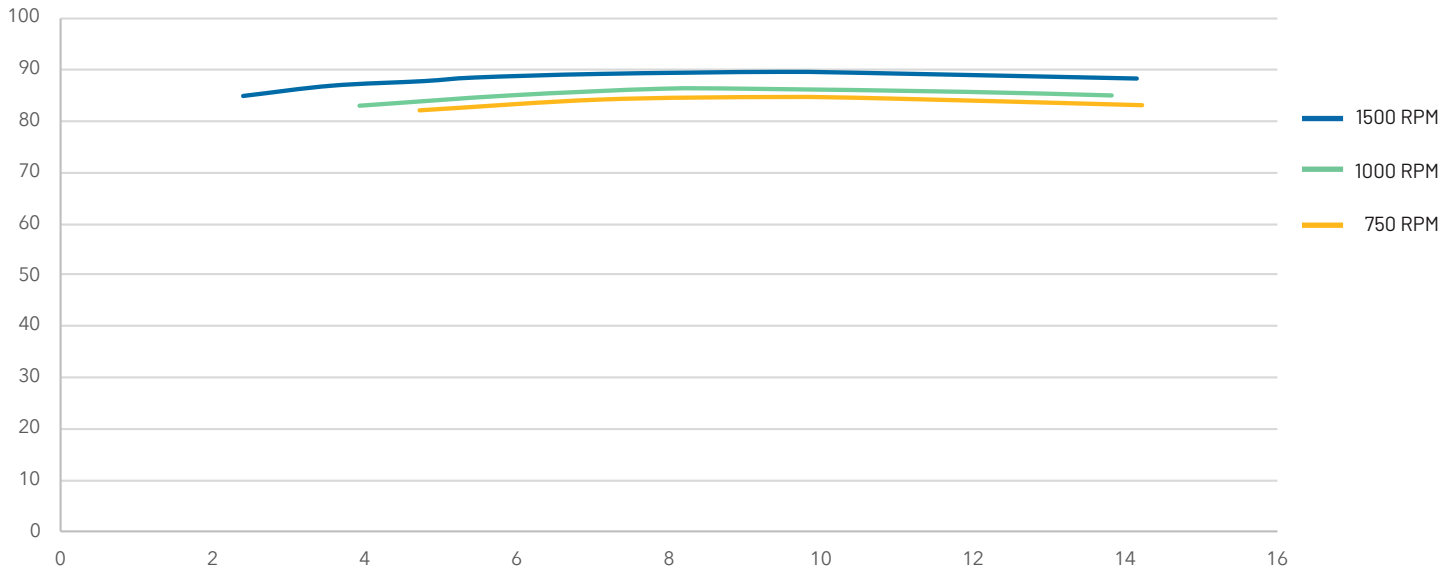


Dimension Table (in millimeters)

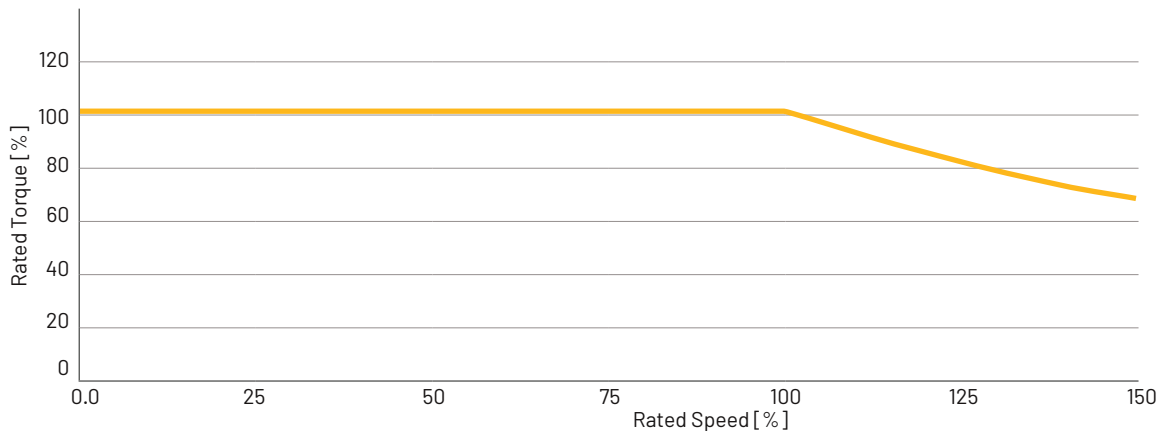
IEC Frame	A	B	H	K	D	E	C	L
90S	140	100	90	M10	24	50	56	313.9
90L	140	125	90	M10	24	50	56	313.9
100L	160	140	100	M12	28	60	38	323.9
112S	190	140	112	M12	28	60	38	323.9

- A - distance between foot holes side-to-side
- B - distance between foot holes front to back
- H - height of shaft
- K - foot hole size
- D - shaft diameter
- E - shaft length
- C - distance from front foot hole to back of shaft horizontally
- L - Overall length



System Efficiency vs Torque at Various Speeds





Torque-Speed Curve



Motor Nameplates (sample)

 TURNTIDE™ Turntide Smart Motor HR-SRM Motors www.turntide.com	
OUTPUT.....2.2kW/3.0hp at 1500 RPM	
MODEL.....V01-0300-2-IE00	AMPS.....8.5A
VOLTAGE.....280-340 VDC	ENCLOSURE...TEFC
SERVICE FACTOR.....1.15	
PEAK EFFICIENCY.....91.0%	
FRAME.....100L	
MAX AMB.....40°C	
INSULATION CLASS.....F	
DUTY.....Continuous	
	
<small>U.S. Pat. Nos. at https://turntide.com/patents</small> <small>WARNING: This motor may only be operated using supplied Turntide Motor Controller.</small> <small>AVERTISSEMENT: Ce moteur doit être utilisé avec le contrôleur de moteur Turntide fourni. On Peut pas utiliser un autre contrôleur.</small>	

 TURNTIDE™ Turntide Smart Motor HR-SRM Motors www.turntide.com	
OUTPUT.....2.2kW/3.0hp at 1500 RPM	
MODEL.....V01-0300-4-IE00	AMPS.....4.5A
VOLTAGE.....535-565 VDC	ENCLOSURE...TEFC
SERVICE FACTOR.....1.00	
PEAK EFFICIENCY.....91.4%	
FRAME.....100L	
MAX AMB.....40°C	
INSULATION CLASS.....F	
DUTY.....Continuous	
	
<small>U.S. Pat. Nos. at https://turntide.com/patents</small> <small>WARNING: This motor may only be operated using supplied Turntide Motor Controller.</small> <small>AVERTISSEMENT: Ce moteur doit être utilisé avec le contrôleur de moteur Turntide fourni. On Peut pas utiliser un autre contrôleur.</small>	

Turntide P04W Motor Controller

The Turntide Motor Controller controls all operations of the Turntide 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 sensors and relay output connections for control and monitoring of associated equipment such as RTUs, AHUs and pumps. The Motor Controller can be configured with Turntide 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 Nameplate

P04W Motor Controller
HR-SRM Motors
www.turntide.com

MODEL	P04W	TYPE	IP20
MOTOR	V01		

INPUT	Current (A)		
	60HZ	50HZ	
208-230V	3.2-9.8	/	
460V	3.8-5.7		
200-240V	/		5.2-11.8
380-415V			3.0-5.2

OUTPUT	3PH 280-680VDC MAX HP 3.0		
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Conforms to UL STD 508C
Certified to CSA STD C22.2#274

WARNING: This Turntide Motor Controller will only operate stated Turntide Smart Motor.

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

LISTED

 Intertek
 5018288

Made in China

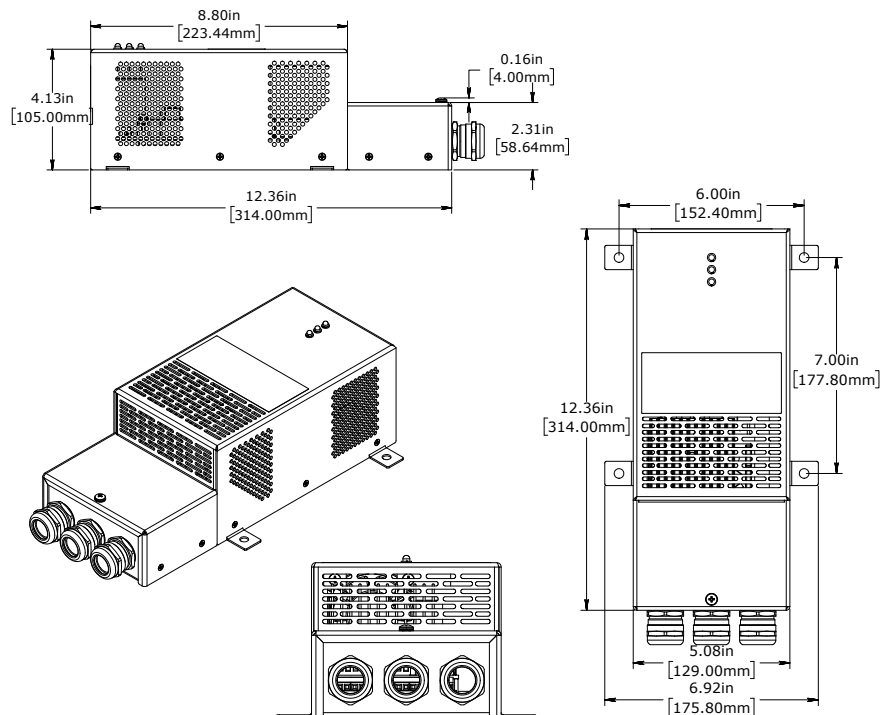
Motor Controller I/O

QTY	Description
7	Programmable digital inputs
1	Programmable voltage output: 0-10V, 20mA 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

Meeting IEC EMC Standards

To meet IEC 61800-3 and IEC 61000-4-5 standards it is mandatory to follow the installation guidelines for EMI/RFI Filter, Surge Arrester, and appropriate shielded conduit as detailed in the Turntide Meeting IEC EMC Standards document.

Motor Controller Dimensions



TURNTIDE TECHNOLOGY FOR SUSTAINABLE OPERATIONS

Our breakthrough technologies accelerate electrification and sustainable operations for energy-intensive industries.