DATASHEET

Turntide TX Motor

Turntide for Strategic Machines™

Turntide's breakthrough sustainability technology is a complete platform for energy optimization that drives down energy consumption and operating costs within mission-critical environments. With Turntide for Strategic Machines, equipment manufacturers can leverage Turntide's technology for sustainable operations to simplify innovation, optimize efficiency, and accelerate profitability.

200-1800 RPM
Operating range

93.2%
Peak motor efficiency

50%
More lightweight and slim compared to similar motors

Turntide TX Motor: Key Benefits

Efficient	Reaches 93.2% peak motor efficiency; exceeds 90% efficiency for fan array design points and maintains high efficiency at high torque levels
Slim and Lightweight	Only 6" wide and under 100 lbs, TX is 50% lighter and 50% slimmer than other similar motors
Connected	Can be commissioned, monitored, and controlled remotely through Turntide cloud mobile applications
Sustainable	Switched reluctance motors are free of rare earth magnets found in permanent magnet motors
Reliable	Concentrated machine wound windings reduce losses and eliminates the potential for shorts, a common problem found in AC induction motors

Suitable for:

Data Centers

Plant Environments

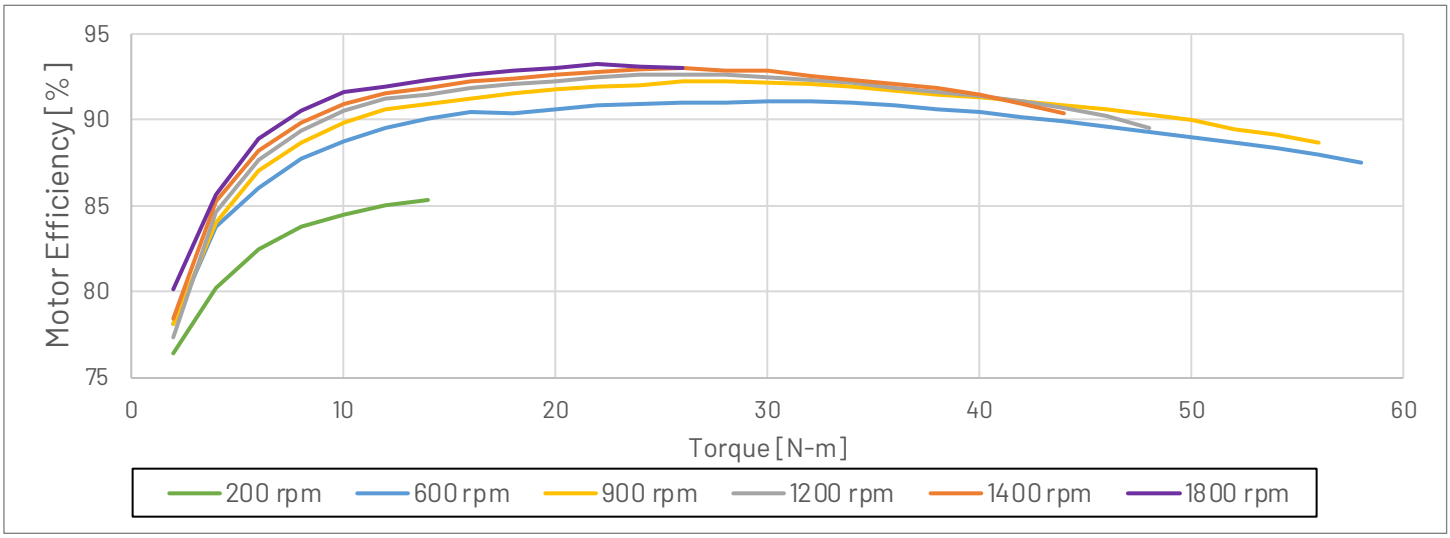
Farms

Engineered with Turntide's high rotor pole switched reluctance architecture and wrapped within a slim, lightweight pancake form factor, the Turntide TX motor optimizes system performance and simplifies installation and maintenance of complex fan systems, such as fan arrays, plenum fans, and axial fan applications. Connected to the cloud, TX also integrates with Turntide's mobile applications to digitize and simplify motor commissioning, monitoring, and control within the system. With TX motor, Turntide helps catalyze sustainability and digital transformation within mission-critical environments such as data centers.

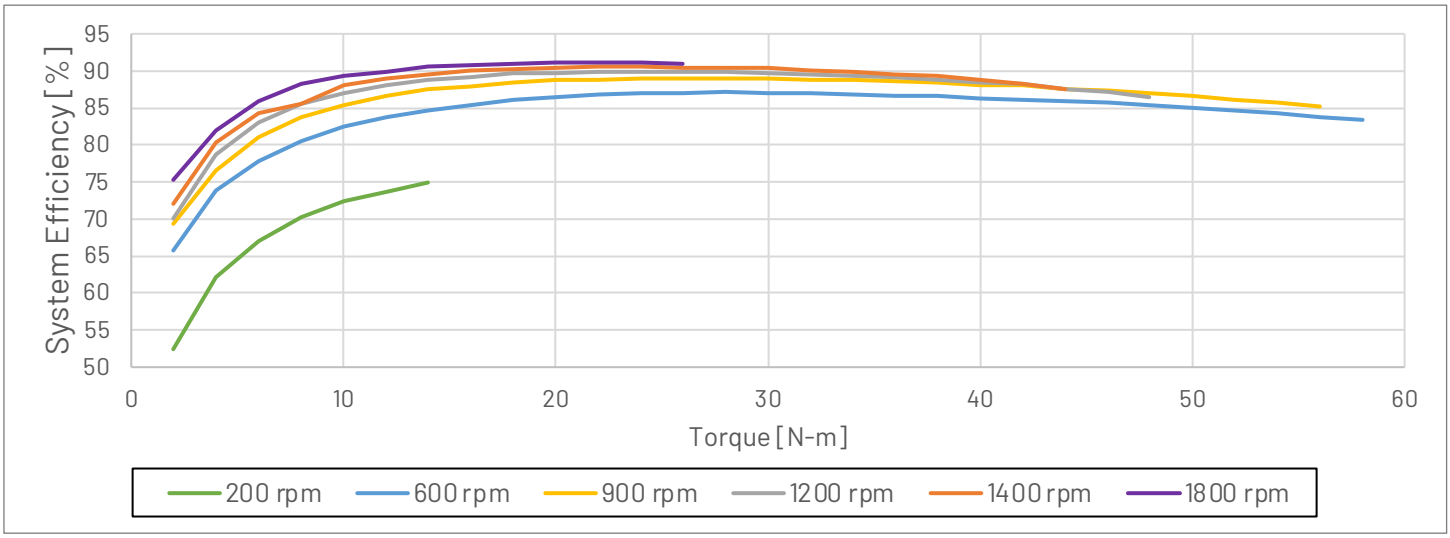
Motor System Characteristics

Motor Model	TX	**Motor Controller Model**	P05
Motor SKU	T02-0725-4-18AD	**Motor Controller Wi-Fi Interface**	802.11 b/g/n (802.11n up to 150 Mbps)
Rated Power	7.25 hp / 5.4 kW nominal	**Motor Controller Wi-Fi Frequency**	2.4 GHz ~ 2.5 GHz (single band)
Rated Service Factor	1.00	**Motor Controller Ingress Protection**	IP66 Rating
Operating Speed	200-1800 RPM	**Motor Controller Weight**	10.5 lb (4.8 kg)
		Motor Controller Mounting Fastener	1/4" or M7
Peak System Efficiency	91.3%	**Motor Duty Rating**	Continuous
		Motor Insulation Class	H
Power Factor	0.73 (max)	**Motor Rotor Inertia**	1.177 lb-ft^2 (0.0496 kg-m^2)
		Motor Enclosure	TEAO
Input Line Voltage	460 V ~	**Motor Ingress Protection**	IP55 Rating
		Motor Weight	96 lb (43.5 kg)
Supply Phase	3-Phase	**Motor Mounting Fastener**	3/8" or M10
Supply Frequency	60 Hz	**System Ambient Temperature Range**	TX Motor: -10°C to +55°C P05 Motor Controller: -10°C to +40°C
Motor Frame Size	Custom Frame	**System Relative Humidity**	95%, non-condensing

Motor Efficiency vs Torque at Various Speeds



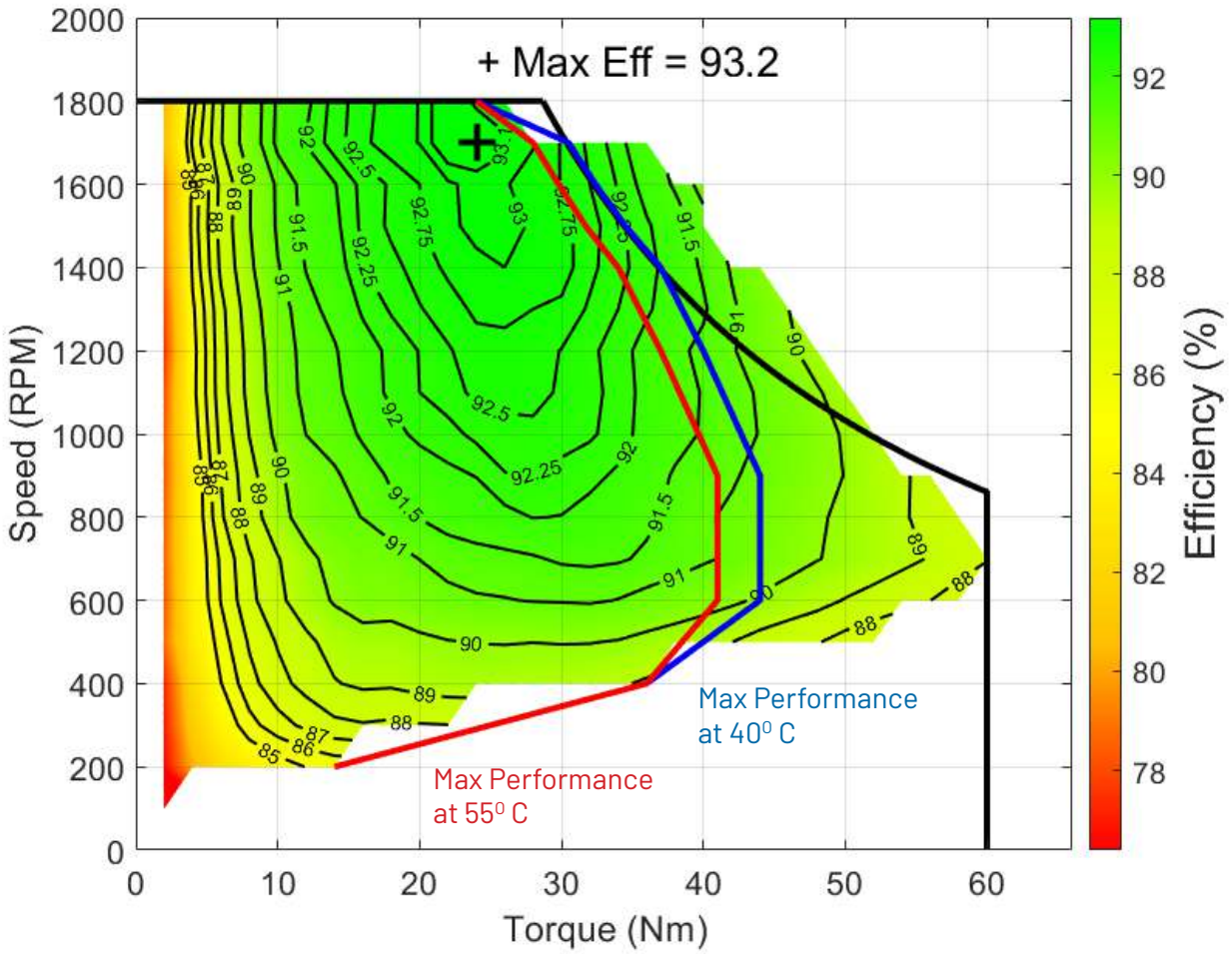
System Efficiency vs Torque at Various Speeds



Thermal Stability Points (at 460V)

Speed [RPM]	Ambient Temp = +40⁰ C					Ambient Temp = +55⁰ C				
	Max Torque [Nm]	Max Power [HP]	Motor Efficiency [%]	System Efficiency [%]	Service Factor	Max Torque [Nm]	Max Power [HP]	Motor Efficiency [%]	System Efficiency [%]	Service Factor
200	14	0.39	85.4	75.0	1	14	0.39	85.4	75.0	1
600	44	3.7	89.9	85.8	1	41	3.45	90.3	86.3	1
900	44	5.5	90.9	87.6	1	41	5.18	91.2	88.1	1
1200	40	6.7	91.4	88.5	1	37	6.23	91.75	89.0	1
1400	37	7.27	92.0	89.5	1	34	6.68	92.4	90.0	1
1800	24	6	93.1	91.1	1	24	6.06	93.1	91.1	1

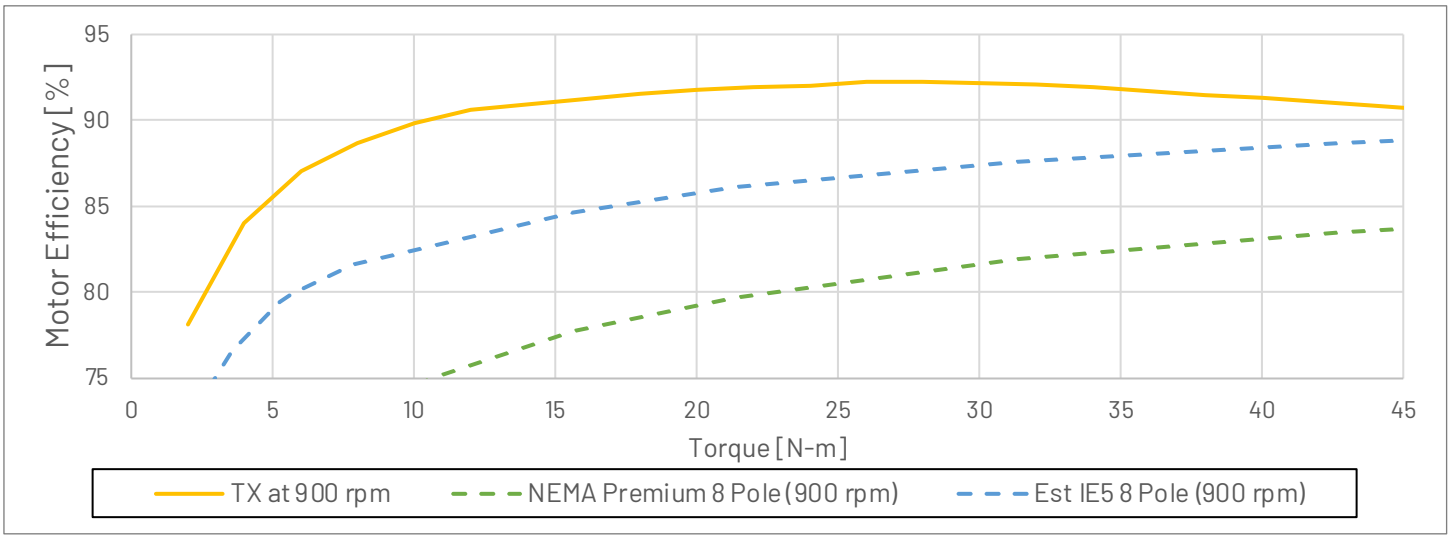
Motor Efficiency Map with Thermal Stability



Note:
All efficiency values in this data sheet are valid for 20⁰ C ambient temperature
93.2% peak motor efficiency occurs at 1700 rpm

Motor Efficiency Comparison vs. Induction Motor Efficiency Standards

Comparison at 900 rpm (8 Pole)



Motor System Characteristics - 600 rpm

Motor Model	TX			
Motor SKU	T01-0330-2-T06-AV		T01-0330-4-T06-AV	
Rated Power	3.3 hp / 2.5 kW nominal			
Rated Service Factor	1.15			
Rated Speed	600 RPM			
Operating Speed	100-600 RPM			
Power Factor	0.8 (max)			
Input Line Voltage	208 / 230 V~	200 / 240 V~	460 V~	400 V~
Supply Phase	3-Phase			
Supply Frequency	60 Hz	50 Hz	60 Hz	50 Hz

Certifications*

RECOGNIZED COMPONENT
C ETL LISTED US
Intertek

CE

UK CA

RoHS COMPLIANT

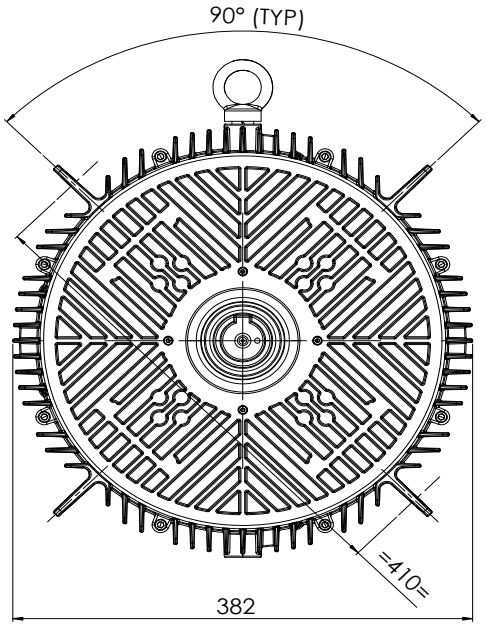
Motor Conforms to Standards: UL 1004-1, UL 1004-8, IEC 60034-1, IEC 60204-1, Certified to CSA C22.2#100.

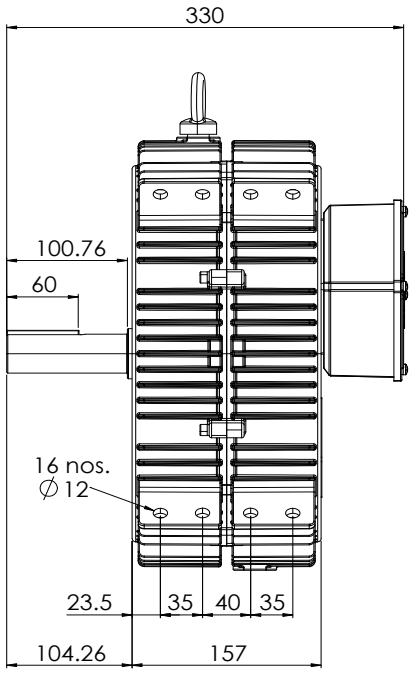
Motor Controller Conforms to Standards: UL 508C, IEC 61800-5-1, IEC 61800-5-2, IEC 61800-3, and IEC 61000-4-5, Certified to CSA C22.2#74.

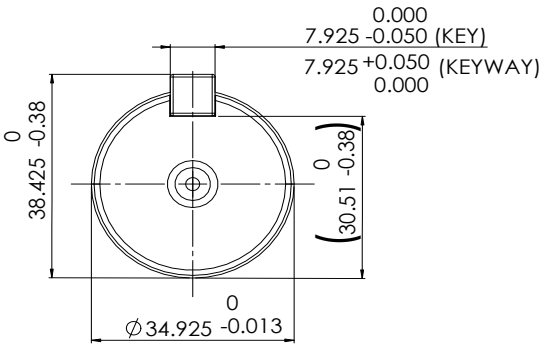
** Motor validated at 6 hp, 1800 RPM and 7.25 hp, 1400 RPM (certification pending - results are shown in this document).*

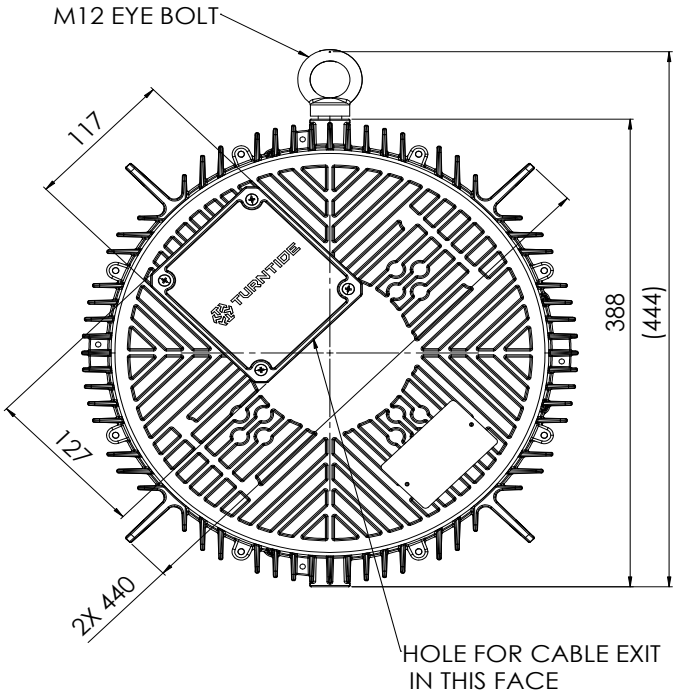
Fully certified at 3.3 hp, 600 RPM, Service Factor 1.15

Motor Dimensions









The Turntide **P05 motor controller** provides the intelligence behind the TX motor, and is the gateway to unlocking all the benefits of the Turntide Smart Motor System™.

P05 Motor Controller: Key Benefits

Built-In Intelligence: P05 runs a proprietary control algorithm that monitors motor feedback to optimize for efficiency at any speed

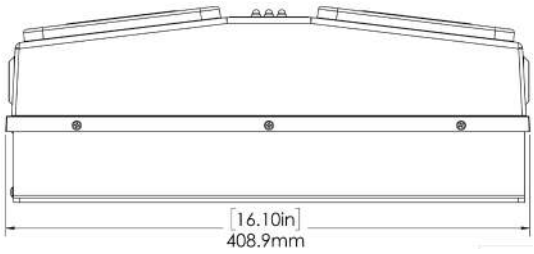
Seamless Connectivity: With up to 16 sensors and relay output connections available for monitoring and control, P05 integrates easily with associated equipment, and can be configured with Turntide's software to run various control scenarios

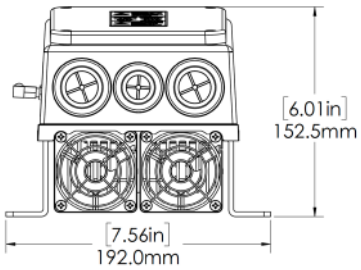
Built for Remote Monitoring: Connected to a Turntide Remote Monitoring Kit, P05 provides remote configuration, updates, alerts, alarms, and system data logging through the Turntide App or any BMS system

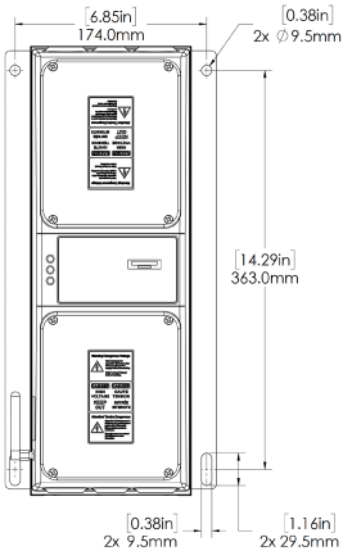
P05 Motor Controller I/O

QTY	Description
7	Programmable digital inputs
1	Programmable voltage output: 0-10V, 20mA limit
4	Relay outputs: 0.3A, 125VAC limit
4	Universal inputs, individually selectable as: • Voltage Mode: 0-10V • Current Mode: 0-20mA; or 4-20mA • Resistive Mode • External Logic Mode

P05 Motor Controller Dimensions







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, Shielded enclosure (for P05), and appropriate shielded conduit as detailed in the Turntide Meeting IEC EMC Standards document.