Infinitum

Datasheet

Aircore EC

Frame 20, 10 HP, 1800 RPM

Motor and drive all in one

Integrated variable frequency drive (VFD) facilitates variable speed applications, reducing overall energy usage.

Power more with less

50% lighter, 30% quieter and up to 25% more efficient, averaging $2,300 in energy savings per motor.*

Powerful intelligence

- State-of-the-art VFD for precise speed control which contributes to energy and audible noise reduction.
- I-con (motor control software) enables users to fine tune operational parameters to their specific applications. Mobile versions available.
- Maximum power density in a 50% smaller and lighter package.

Optimized efficiency

- Meets highest efficiency standards at a wide range of load conditions.
- Increased operational efficiency by eliminating torque ripple, cogging, stator hysteresis and eddy current losses.
- Compact form factor reduces wiring and facilitates direct mounting to fan applications, increasing efficiency by up to 25% compared to a traditional motor.

Sustainable solution

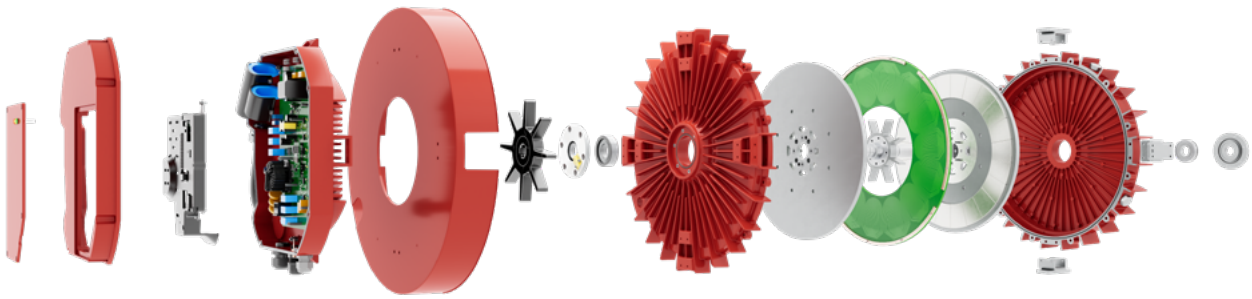
- Our PCB stator uses 66% less copper and is 10x more reliable than traditional iron-core, copper-wound stators.
- Enhanced serviceability due to modular design enables the reuse and extended lifespan of components, keeping them out of the landfill.
- Increased efficiency reduces customer's scope 2 emissions by up to 25%.

Applications

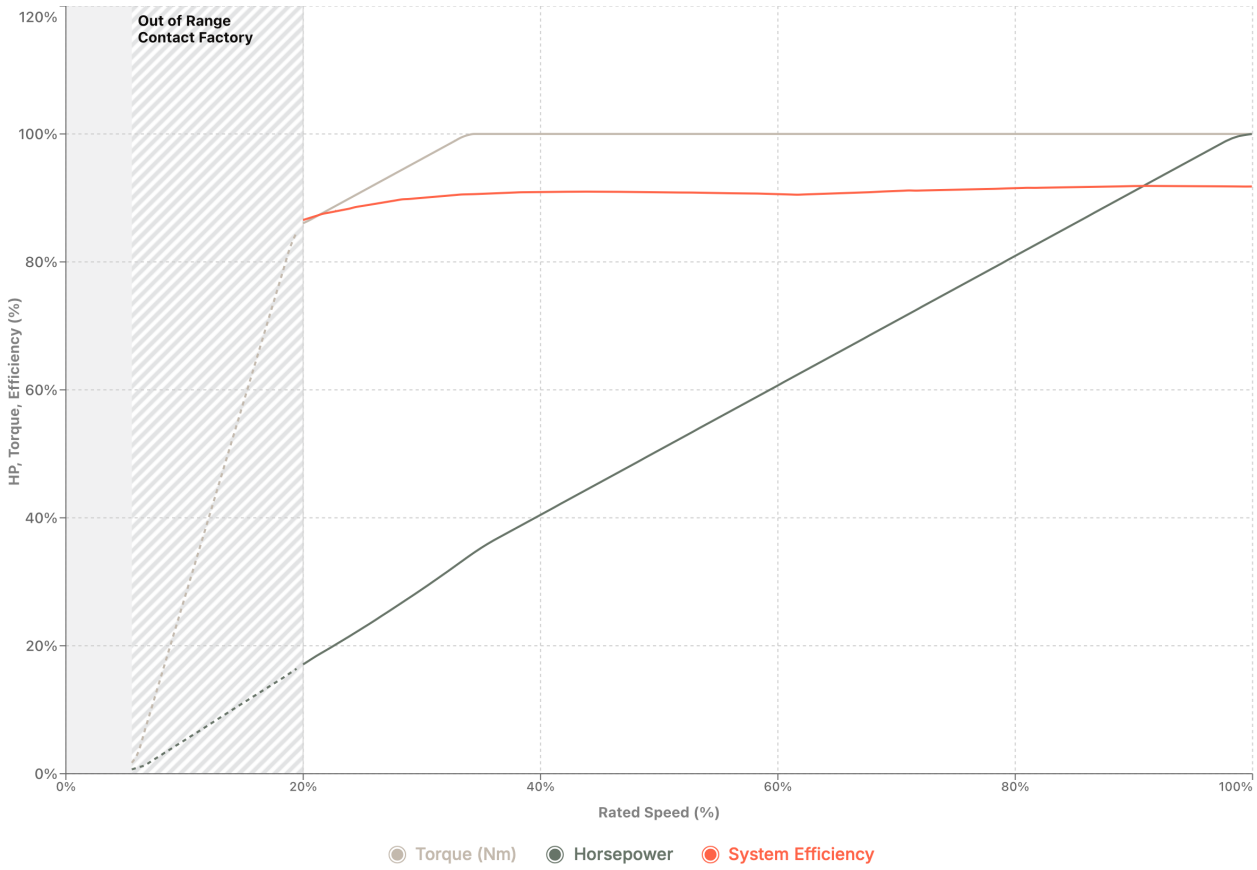
Commercial HVAC

Pumps

Material handling



Performance



The recommended RPM range for this motor is 360-1800 RPM. Operating below 360 RPM is not advised except during coasting or ramp-up. For operation outside of this recommended range, please contact Infinitum for a customized solution. These curves are for reference only; actual performance may vary.

Motor information	
Rated power	10 HP, 7.46 kW
Rated torque	29.2 lb-ft, 39.5 Nm
Rated speed	1800 RPM
Max speed	1800 RPM (see above)
Min speed	100 RPM (see above)
Weight (motor & drive)	128.1 lbs, 58.1kg
Frame diameter	21.1", 53.7 cm
Length (motor & drive)	8.9", 22.5 cm
System efficiency	91.8% (460 V), 91.8%* (575 V)
Duty cycle	Continuous
Variable speed	Yes, integrated VFD
Service factor	1.0
Motor thermal protection	Electronically-protected L
Motor type	TEFC
Enclosure rating	IP54

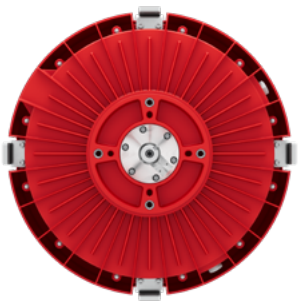
*Calculated.

Electrical	
Supply voltage	460 VAC ± 10%, 575 VAC ± 10%
Supply phase	3 Phase
Supply voltage frequency	60 Hz ± 5%
Voltage imbalance	± 3% Phase to phase voltage
Short circuit current rating (SCCR)	Input – 5 kA, 500 V maximum
Rated amps	11.1 A ±10% (460 VAC), 9.8 A* ±10% (575 VAC)
Motor insulation class	B
Grounding	Grounded Wye, Delta, HRG (460V), Grounded Wye (575V)

*Calculated.

Mechanical	
Direction of rotation	CW/CCW
Motor frame material	Aluminum
Rotor inertia	0.49 kg.m^2
Bearing type – DE	Standard: steel, 6206 sealed, permanently lubricated Optional: hybrid ceramic (see catalog number)
Bearing type – NDE	Standard: steel, 6206 sealed, permanently lubricated Optional: hybrid ceramic (see catalog number)
Grease specification	Mobil polyrex EM
Regreasable	No
Grounding brushes	Included – NDE
Shaft design	Keyed
Motor mounting position	Horizontal or vertical
Motor mounting type	C-face (182TC) and body mount

Ambient operating conditions		
Condition	**Operation**	**Storage & transportation**
Altitude	0 to 3300 ft. (1,000 m) above sea level 9% power derate per 1,000 m up to 4,000 m	NA
Ambient temperature	-13 to 104 °F (-25 to 40 °C) 2% power derate per 1 °C up to 50 °C	-40 to 185 °F (-40 to 85 °C)
Relative humidity	95%, No condensation allowed	95%, No condensation allowed
Contamination levels	No conductive dust allowed	No conductive dust allowed




Control connections

Refer to IOM Manual for more details.

Description	Quantity	Type
Analog input Software selectable for voltage or current input	1	Voltage signal – 0 to 10 VDC, RIN = 20 kΩ Current signal – 4 to 20 mA, RIN = 500 Ω Resolution – 0.1% Accuracy – ± 5%
Analog output	1	Voltage – 0 to 10 VDC, 10 mA maximum, 1 kΩ minimum
Auxiliary voltage	1	24 VDC ± 5%, user output, 250 mA maximum
Digital input	4	24 VDC with internal or external supply Input impedance – 1 kΩ
Digital output	2	Open drain output Maximum switching voltage 40 VDC Maximum switching current 350 mA
Relay output	1	Normally open (NO), normally closed (NC) contact arrangements Maximum switching voltage of 125 VAC / 30 VDC Maximum switching current of: NO – 10 A (VAC) / 5 A (VDC) NC – 3 A (VAC) / 3 A (VDC)
EIA-485 Interface for Modbus RTU or BACnet MS/TP	1	Shielded twisted pair cable with impedance of 120 Ω Half duplex Modbus or BACnet communication protocol
Modbus TCP	1	Ethernet for I-con (desktop or mobile)

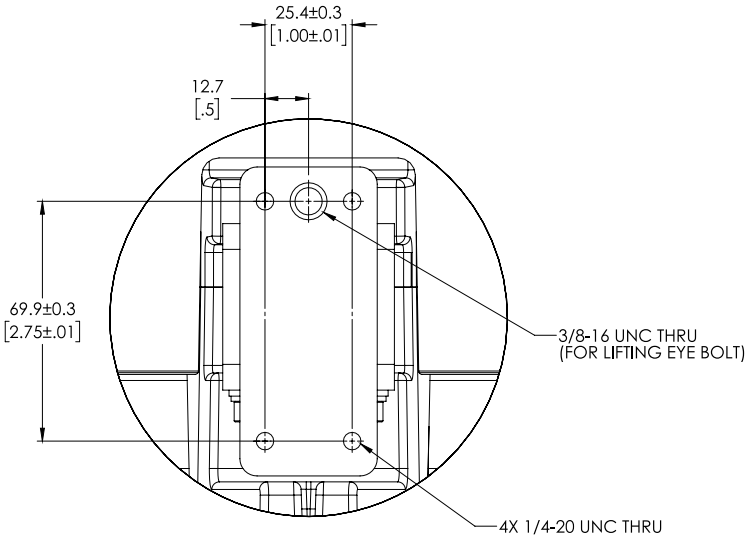
Certifications

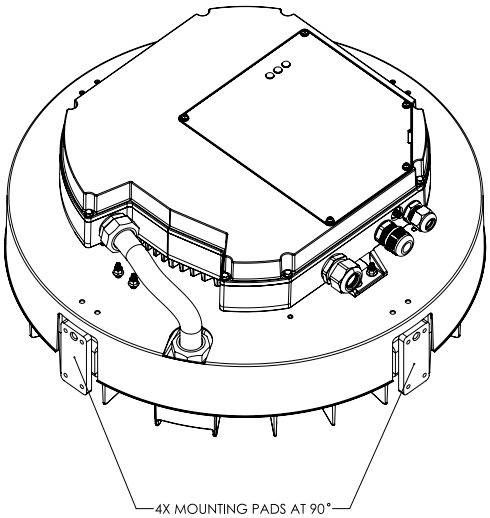
Regulatory	
UL 1004-7	Standard for electronically protected motors
UL 1004-1	Rotating electrical machines – general requirements
CSA C22.2 No.77	Motors with inherent overheating protection
UL 61800-5-1	Standard for adjustable speed electrical power drive systems, Part 5-1: safety requirements & electrical, thermal & energy

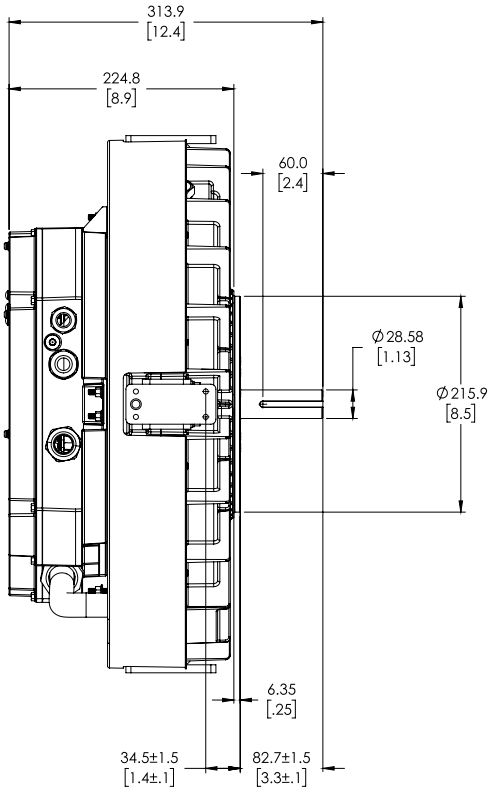
Mounting & dimensions

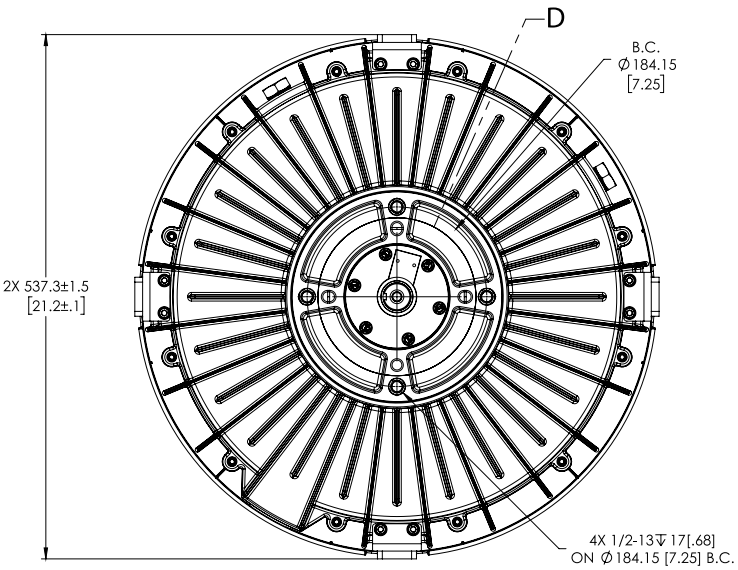
Below are the measurements needed for installation tasks.

- There are four mounting pad locations.
- Each pad is spaced 90° apart, containing 4 mounting holes and one lifting eye hole.
- The DE face of the mounting block has threaded holes for four bolts (1/2”-13).
- All bolt holes should be used for secure mounting of the motor to equipment.









Catalog number decoder

Family	Frame	Rated power	Rated speed	Volts	VFD & I/O	Reserved	Bearings	Shaft Length	Wireless Support	IP rating	Grounding
XX	**XX**	**XXXX**	**XXXX**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
AE	20	1000	1800	A: 460 V / 60 Hz C: 575V / 60 Hz	A: Modbus RTU B: BACnet MS/TP	A: none	S: steel H: hybrid	A: 3.25"	A: none	4: IP54	0: Grounded Wye 3: Delta, HRG

Ordering information

Catalog number	Modbus RTU	BACnet MS/TP	Steel bearings	Hybrid bearings	Grounded Wye	Delta, HRG
460V						
AE20-1000-1800-AAAS-AA40	X		X		X	
AE20-1000-1800-AAAH-AA40	X			X	X	
AE20-1000-1800-ABAH-AA40		X		X	X	
AE20-1000-1800-ABAS-AA40		X	X		X	
AE20-1000-1800-AAAS-AA43	X		X			X
AE20-1000-1800-AAAH-AA43	X			X		X
AE20-1000-1800-ABAH-AA43		X		X		X
AE20-1000-1800-ABAS-AA43		X	X			X
575V						
AE20-1000-1800-CAAS-AA40	X		X		X	
AE20-1000-1800-CAAH-AA40	X			X	X	
AE20-1000-1800-CBAH-AA40		X		X	X	
AE20-1000-1800-CBAS-AA40		X	X		X	

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This motor is based on a standard AE20-1000-1800. Datasheet generated by MST version 4.1.3.

** Infinitum motor system compared to IE4/ NEMA Super Premium AC Induction motor + VFD over a 10-year lifetime. Efficiencies are dependent on specific motor and application.*