

Datasheet

## Aircore EC Frame 20, 15 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 10% more efficient than traditional AC induction motors.



### Powerful intelligence

- State-of-the-art VFD allows precise speed control, reduces energy usage, and operates at a frequency to minimize audible noise.
- I-con (motor control software) enables users to fine tune operational parameters to their specific applications.
- 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 10-15%.

### Sustainable solution

- PCB stator uses 66% less copper and has proven to be 10x more reliable than traditional iron-core, copper-wound stators.
- Smaller and lighter housing reduces transportation emissions by 30%.
- Easy serviceability through our modular design enables the reuse and extended lifespan of components, keeping them out of the landfill.

### Applications



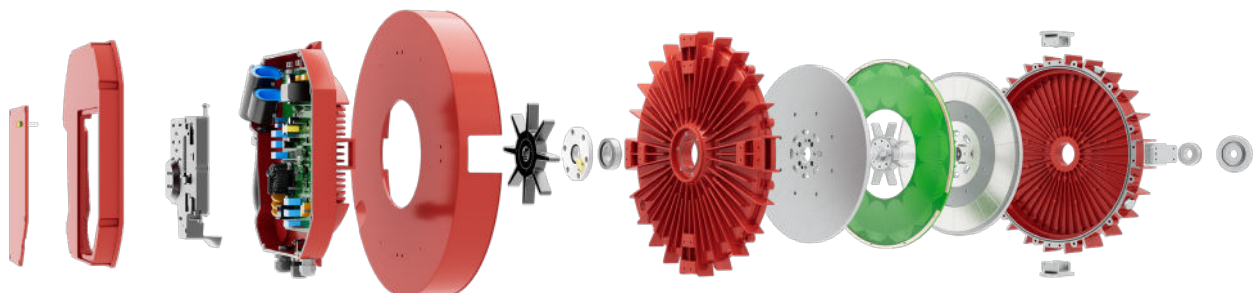
Commercial HVAC



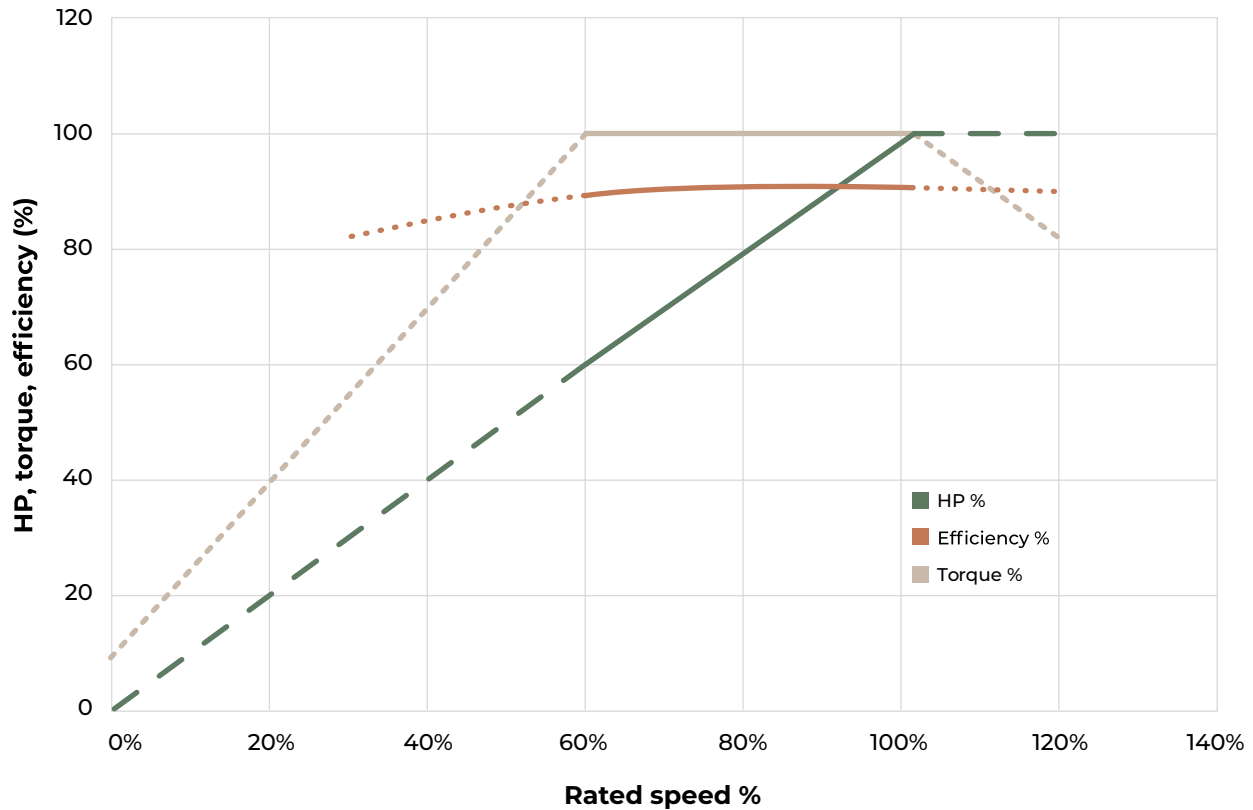
Pumps



Material handling



## Performance



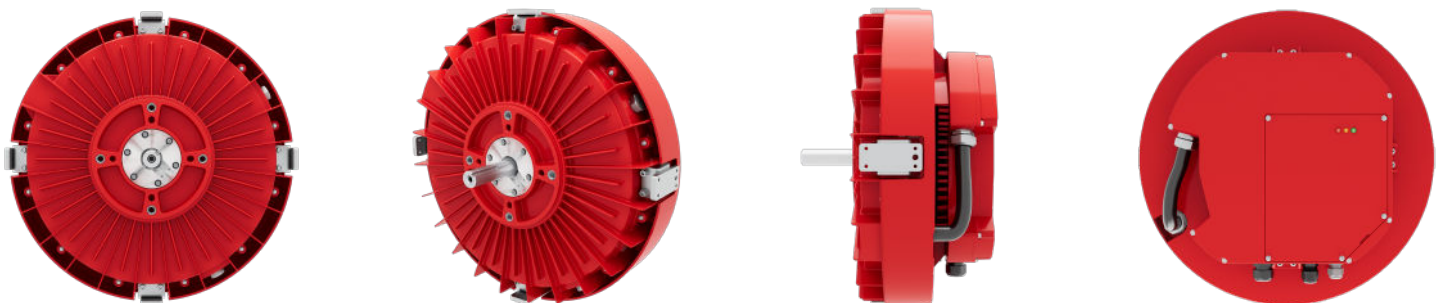
Note: Infinitum does not recommend using the motor below 60% of rated speed except when coasting or ramping up. It is also essential to restrict power and FLA within the nameplate rating when operating the motor above 100% of its rated speed. To operate the motor outside the recommended operating range, please contact the factory and our Application Engineers will provide a customized solution.

Motor information	
Rated power	15.0 HP, 11.19 kW
Rated torque	44.3 lb-ft, 60.0 Nm
Rated speed	1800 RPM
Max speed	2160 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	90.6%
Duty cycle	Continuous
Variable speed	Yes, integrated VFD
Service factor	1.0
Motor thermal protection	Electronically-protected L
Motor type	TEFC
Enclosure rating	IP54

<b>Electrical</b>	
Supply voltage	460 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	18.0 A (460 VAC)
Motor insulation class	B

<b>Mechanical</b>	
Direction of rotation	CW/CCW
Motor frame material	Aluminum
Rotor inertia	0.49 kg/m <sup>2</sup>
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 – DE
Shaft design	Keyed
Motor mounting position	Horizontal or vertical
Motor mounting type	C-face (182TC) and body mount

<b>Ambient operating conditions</b>		
<b>Condition</b>	<b>Operation</b>	<b>Storage &amp; transportation</b>
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.

Note: not all I/Os are supported in every motor. (See catalog number)

Description	Quantity	Type
Analog input Software selectable for voltage or current input	1	Voltage signal – 0 to 10 VDC, RIN = 20 k $\Omega$ Current signal – 0 to 20 mA, RIN = 500 $\Omega$ Resolution – 0.1% Accuracy – $\pm$ 5%
Analog output (see above) Software selectable for voltage or current output	1	Voltage – 0 to 10 VDC with 10 mA maximum Current – 0 to 20 mA with load < 500 $\Omega$
Auxiliary voltage	1	24 VDC user supply with $\pm$ 5% with 1 A maximum
Digital input	4	24 VDC with internal or external supply Input impedance – 1 k $\Omega$
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	1	Shielded twisted pair cable with impedance of 120 $\Omega$ Transfer rate of 19200 baud Half duplex Modbus communication protocol
Modbus TCP	1	Ethernet

## Certifications

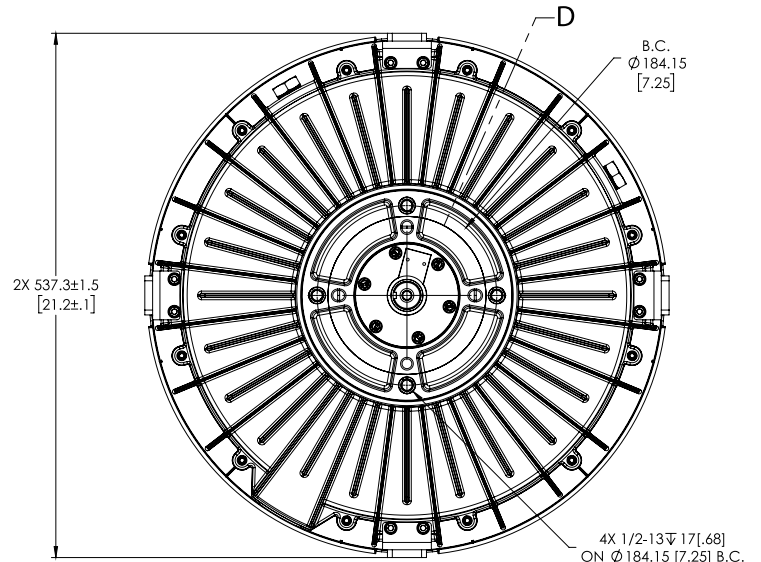
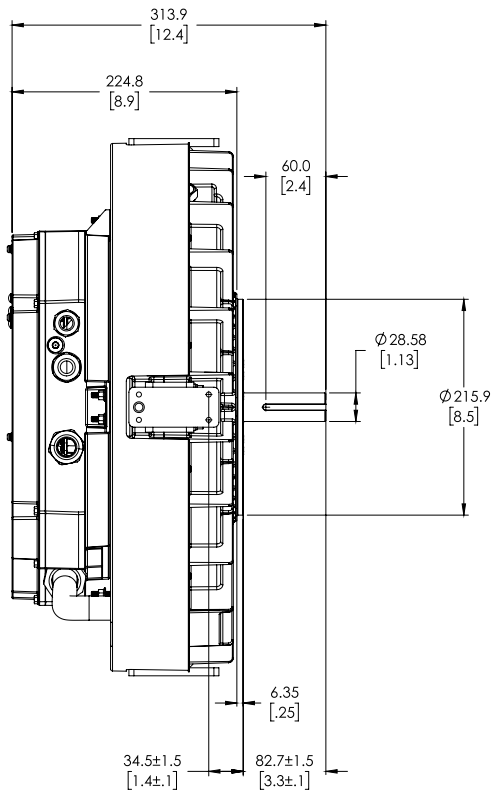
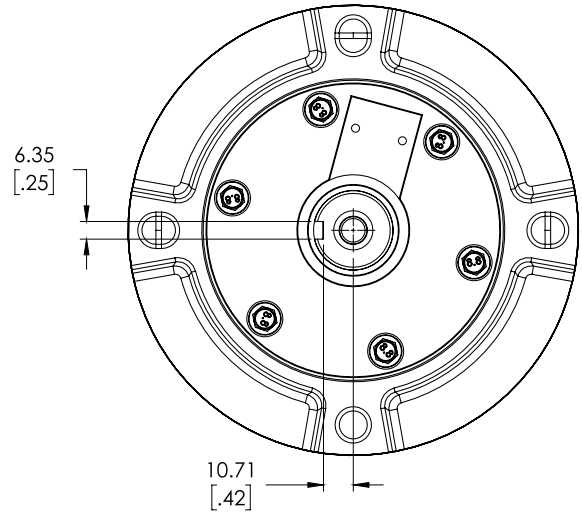
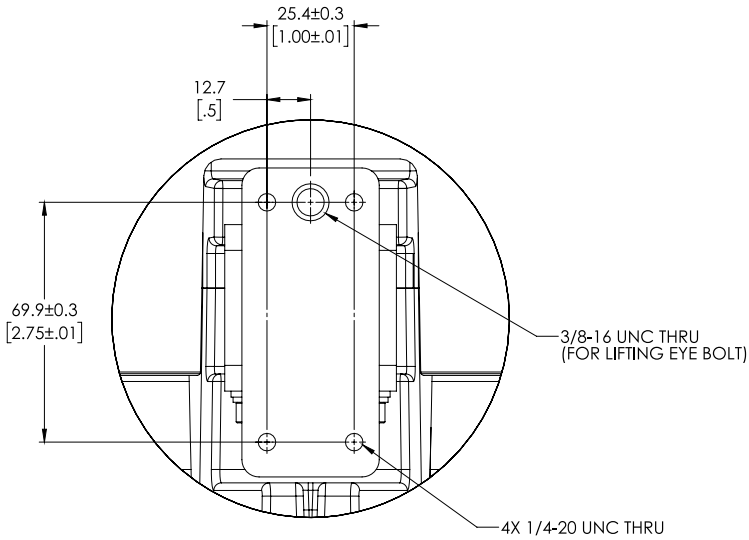
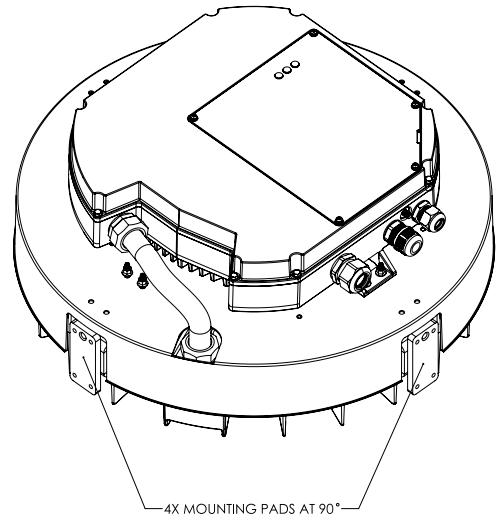
Regulatory	
UL 1004-7	Standard for electronically protected motors
UL 1004-1	Rotating electrical machines – general requirements
CSA C22.2 No.77	Motors with inherent overheating protection
UL 61800-5-1	Standard for adjustable speed electrical power drive systems, Part 5-1: safety requirements & electrical,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



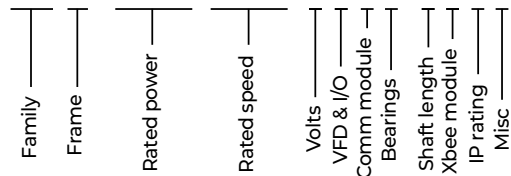
## Catalog number decoder

Family	Frame	Rated power	Rated speed	Volts	VFD & I/O	Comm module	Bearings	Shaft length	Xbee module	IP rating	Misc
<b>XX</b>	<b>XX</b>	<b>XXXX</b>	<b>XXXX</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
AE	20	1500	1800	A*: 460 V / 60 Hz	A*: Modbus, analog input	A*: none	S*: steel H: hybrid	A*: 3.3" B: 4.0"	A*: none	4*: IP54	0*: EPL

\*Standard

### Example catalog number

AE20-1500-1800-AAAS-AA40



### Example decoded

AE20 = Aircore EC, 20 frame

1500 = 15 HP

1800 = 1800 RPM

AAAS = 460 V / Modbus / Analog Input / No communication module / Steel bearings

AA40 = 3.3" shaft length / No IoT module / IP54 rating / Electronically Protected-L

## Ordering information

Catalog number	Description
AE20-1500-1800-AAAS-AA40	Aircore EC, frame 20, 15 HP, 1800 RPM, 460 V / 60 Hz, Modbus RTU, analog input, no comm module, steel bearing, standard shaft, no Xbee module, IP54, electronically protected for locked rotor
AE20-1500-1800-AAAH-AA40	Aircore EC, frame 20, 15 HP, 1800 RPM, 460 V / 60 Hz, Modbus RTU, analog input, no comm module, hybrid bearing, standard shaft, no Xbee module, IP54, electronically protected for locked rotor
AE20-1500-1800-AAAS-BA40	Aircore EC, frame 20, 15 HP, 1800 RPM, 460 V / 60 Hz, Modbus RTU, analog input, no comm module, steel bearing, custom shaft, no Xbee module, IP54, electronically protected for locked rotor
AE20-1500-1800-AAAH-BA40	Aircore EC, frame 20, 15 HP, 1800 RPM, 460 V / 60 Hz, Modbus RTU, analog input, no comm module, hybrid bearing, custom shaft, no Xbee module, IP54, electronically protected for locked rotor



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