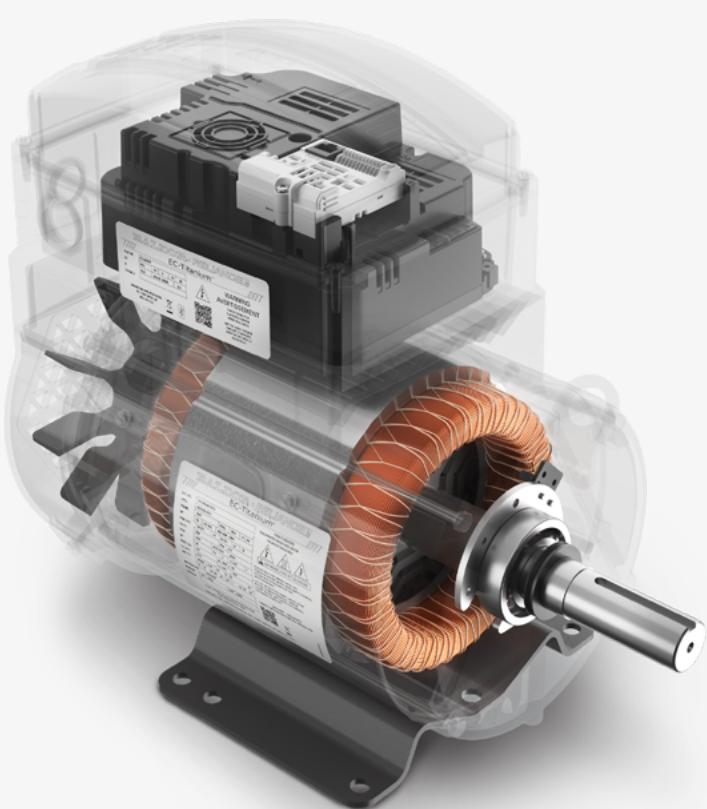


BALDOR-RELIANCE®

EC Titanium™

SP5+ ultra-efficient motor solution

BALDOR • RELIANCE

The Baldor-Reliance EC Titanium SP5+ motors and integrated drives combine synchronous reluctance and permanent magnet technology to deliver ultra-high efficiency that improves your operation's bottom line.

It is the most efficient low voltage motor available in the market today.

EC Titanium

Ultimate efficiency and reliability



SP5+ (IE5+) ultra-premium efficiency

- Highest system efficiency at full and partial speeds and loads
- Exceed IE5 efficiency per IEC Technical Standard 60034-30-2, and NEMA Super-Premium efficiency levels



Eco-friendly design

- SP5+ motors have advanced rotor design utilizing non-rare earth magnets
- SP5+ motor uses recycled metals and materials



Variable speed operation

- Choose either an integrated motor-drive option or motor-only for flexibility
- Fan & pump control



Smart motor solution

- Remote programming & monitoring PC and mobile tool
- Apps that help with calculating energy use and savings



Plug-and-play, ready to go

- Pre-programmed motor and drive designed to run out-of-the-box
- Integrated motor-drive eliminates expensive wiring and installation time
- No drive experience necessary



Reliable and quiet operation

- Extremely low starting current and less cogging reduces mechanical stress, increase reliability and produces ultra-quiet operation
- Internally mounted shaft grounding brush included as standard to mitigate bearing currents

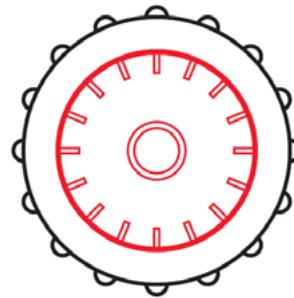


Scan for video

EC Titanium

Newest rotor technology to achieve the highest efficiency

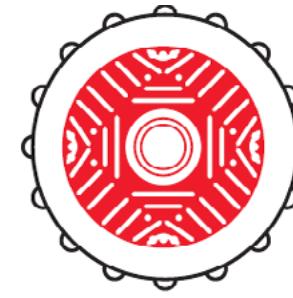
Currently, FASR (ferrite assisted synchronous reluctance) rotor technology offers the most efficient performance available. This type of motor will reliably deliver IE5+ performance when it is paired with a variable speed drive (VSD). Together, magnet-assisted synchronous reluctance motors with VSDs enable significant efficiency gains over induction motors across a wide speed range, and they offer particular benefits when operated with partial loads. Integrated motor drive packages are available in standard sizes meaning that they can be used as drop-in replacements for standard NEMA and IEC motors.



AC Induction motor

- Slip losses in rotor (I^2R)
- Heats bearings and motor
- Lower efficiency adds to heat generated

Higher rotor and stator losses



SP5+ motor

- Synchronous reluctance design eliminates rotor losses
- The addition of ferrite magnets increases field strength (more lines of flux) less work required stator
- Less overall losses, lower current draw and lower motor temperatures

No rotor and stator losses



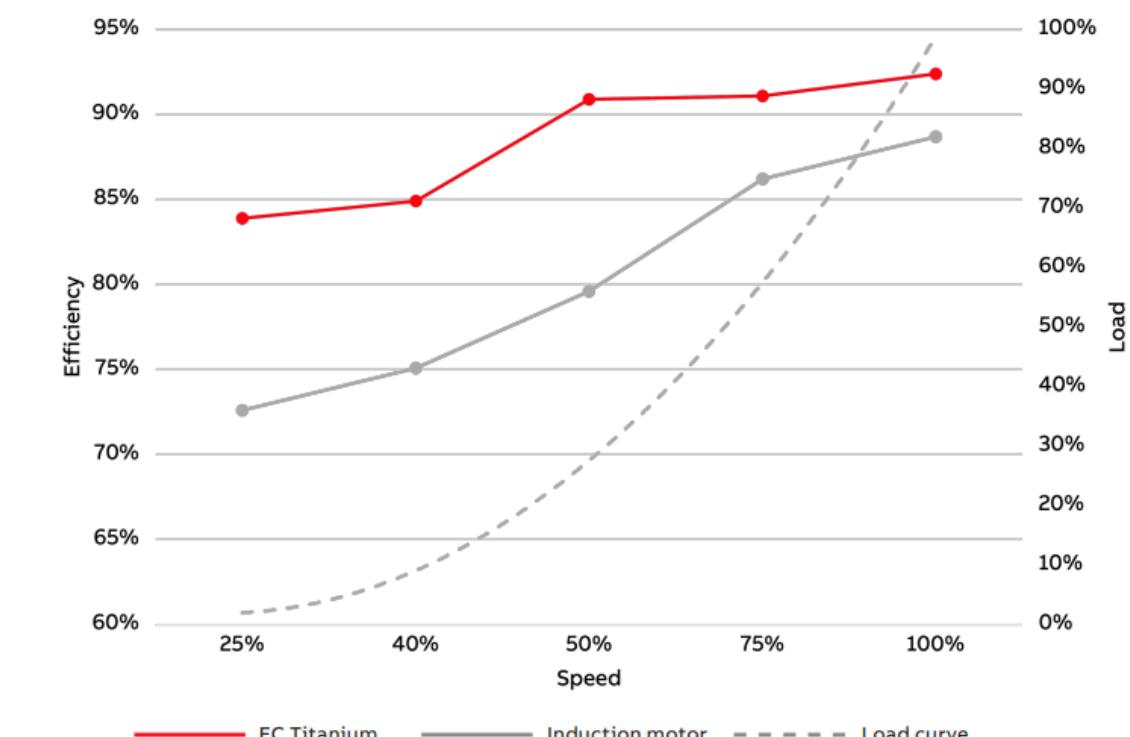
EC Titanium

Ideal for variable torque applications

EC Titanium motors' wider speed torque range with higher efficiency allows more flexibility to match a fan impeller and reach a nominal fan duty point. Results at partial load points show efficiency gains of as much as 16 percent over NEMA Premium and IE3 induction motors.

EC Titanium vs Induction:

Efficiency level for speed and load



For pump and fan applications with variable speed and variable torque (load), EC Titanium integrated motor drives display superior efficiency performance over induction motors at rated and partial load speed points.

EC Titanium innovation

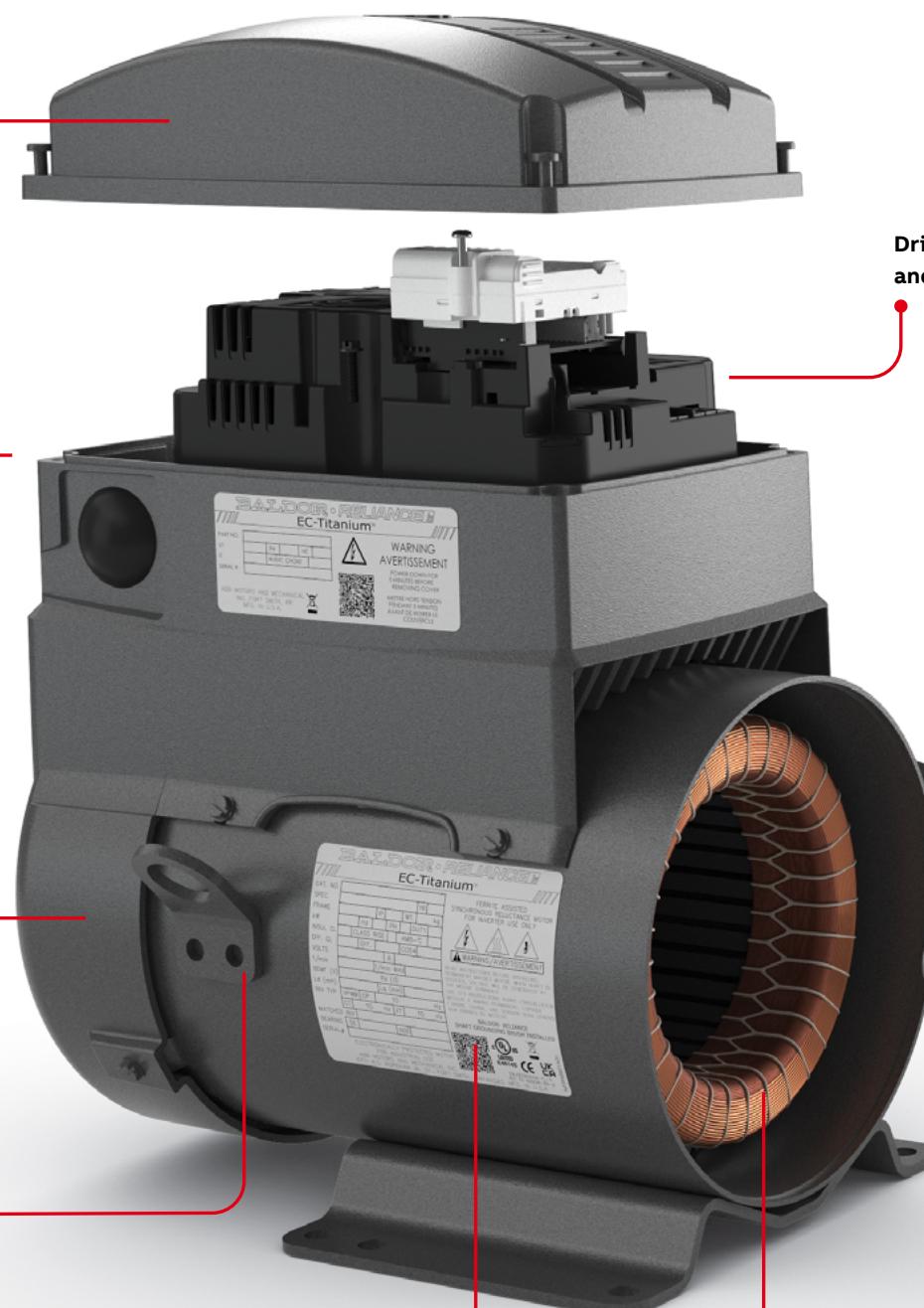
Plastic drive cover (NEMA) or aluminum design for IEC motors and plenum use.

IP54 (IP55 for IEC Plenum design) Drive and motor with conformal coated drive components.

Low noise fan and cover Designed for maximum cooling and quiet operation.

Lifting lug provisions Convenient and safe for mounting.

QR coded nameplate Easy access motor technical data.



Drive pre-wired and programmed.



Top mount integrated drive
NEMA C-Face and footless,
IEC B3 foot mounted and
B14 or B5 footless options

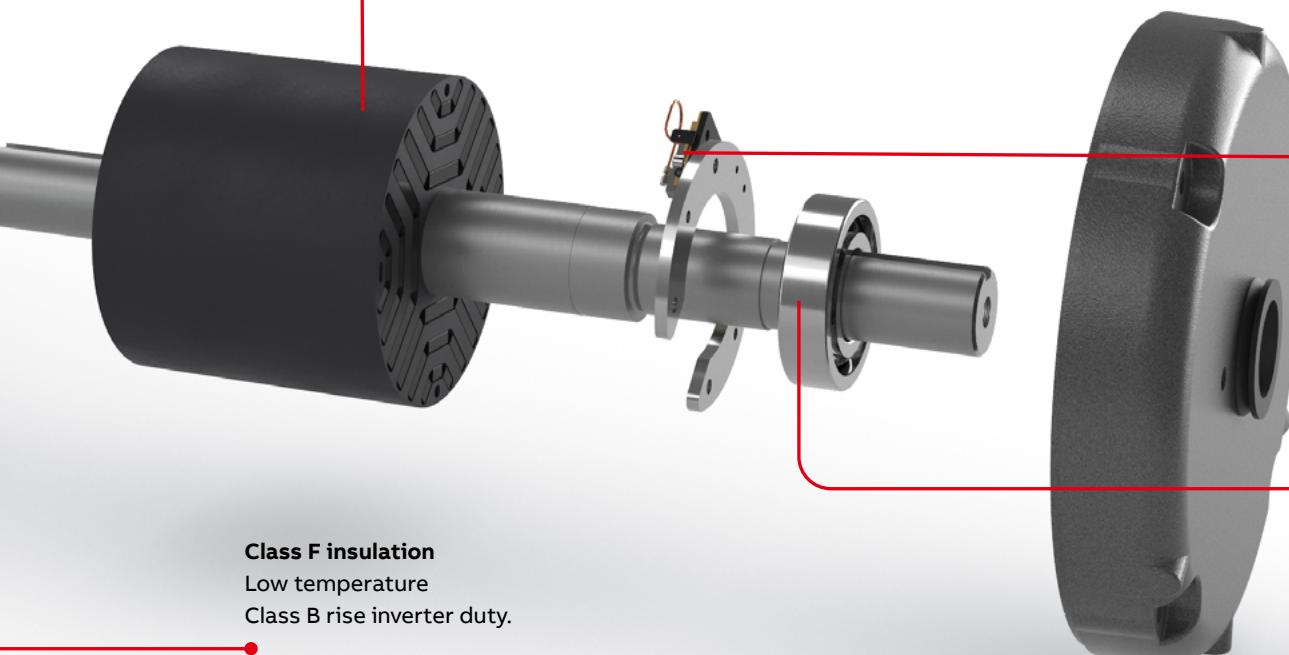


Axial mount integrated drive
NEMA C-Face and footless,
IEC B3 foot mounted and
B14 or B5 footless options



Motor only version
NEMA C-Face and footless,
IEC B3 foot mounted and
B14 or B5 footless options

SP5+ ultra-efficient (IE5+ equivalent)
Ferrite Assisted Synchronous Reluctance rotor (FASR).



Class F insulation
Low temperature
Class B rise inverter duty.

Shaft grounding brush
Installed internally to prevent bearing current discharges and minimize shaft voltages.

Polyrex EM grease
Protects motor bearings, improves lubrication, superior resistance to washout, rust and corrosion.

ENERGY STAR 2024
Emerging Technology Award

EC Titanium motor only configuration for expanded capabilities



Pairing EC Titanium with the ABB ACH580 drive enables the use of advanced motor control algorithms for higher efficiencies across the speed and load range than traditional motor solutions.

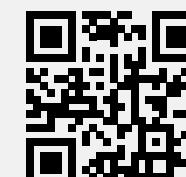
ABB Drives feature support

- ACH580 V2.15 ID run firmware support
- Integral harmonic mitigation
- Ultra-low harmonics compatible
- Wide range network interfaces
- Extensive pump and fan drive features
- Used also for both variable torque and constant torque loads such as unit handling conveyors

All EC Titanium motors come standard with shaft grounding brush.

Motors controlled by VSDs are beneficial because they provide speed control on applications such as fans, pumps, and conveyors, allowing users to run their motors at optimum efficiency. Shaft

grounding brushes provide an alternate low-impedance path from the motor shaft to the motor case. This channels the current away from the bearings. It effectively eliminates shaft voltage, and therefore bearing current, which occur when voltages induced in the motor rotor and shaft are discharged to earth through the bearings causing premature failure.



Shaft grounding video

IE5 efficiency according to IEC TS 60034-30-2

Technical specification IEC TS 60034-30-2 (2016) specifies the efficiency classes for variable speed drive (VSD) motors [i.e. motors which cannot be operated direct on line (DOL)]. Typical standard low voltage induction motor efficiency is determined according to IEC 60034-30-1 in sinusoidal (DOL) supply.

IEC TS 60034-30-2 highlights

- The IE class limit values in new IEC TS 60034-30-2 are reduced by adding the additional harmonic losses caused by the drive:
 - 15% additional losses for motors up to 90kW
- Limit values available also for IE5 level
- Limit values to be achieved with 90% speed, 100% torque (n90 Efficiency)

DOL or VSD motor – Same IE class, same efficiency performance in VSD duty

This allows direct comparison in IE class level of traditional induction motors in variable speed usage and advanced technology motors designed only for variable speed drive (like EC Titanium motors). It does not matter if the IE classification is done with DOL supply according to IEC 60034-30-1 or with VSD supply according to IEC TS 60034-30-2. The given IE class still illustrates efficiency performance of both solutions in VSD operation very well. Same IE class, same efficiency performance.

Example:

11 kW 4-pole motor efficiency	Efficiency requirement (IE5)
IEC 60034-30-1 (DOL)	94.6%
IEC TS 60034-30-2 (VSD)*	93.9%
Baldor-Reliance EC Titanium (actual)	94.4%

* There currently is no IE5 DOL motor available and shown for comparison only. Actual DOL motor efficiency and IEC 60034-30-1 covers up to IE4 efficiencies only.



Rating plates

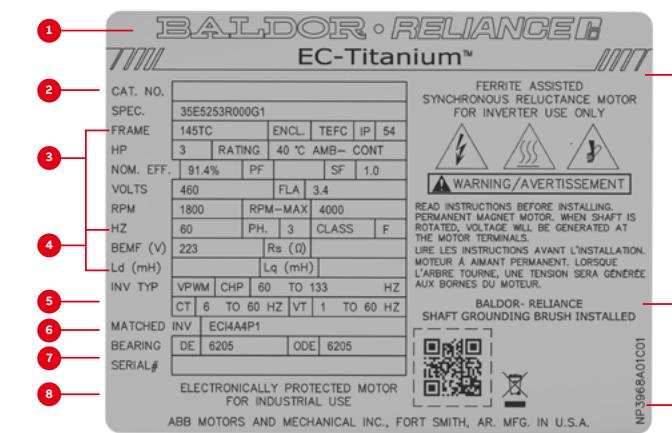
EC Titanium NEMA and IEC frame product ordering

Baldor-Reliance® EC Titanium stock assembly consists of the standard rolled steel motor with a selection of a (M) motor only, or either a (T) top mount or (A) axial mount motor drive package and defined by voltage and power rating at 1800 RPM (NEMA) or 1500 RPM (IEC) RPM base speed. Custom configuration are available and can be selected from the part number definition table EC Titanium.

Product series	Frame	Product code	Variant code
ECS	101	MOKOP8 DF4	+
1 2 3 4 5 6 7 8 9			
Product series			
ECS EC Titanium			
Frame			
100 Rolled steel motor frame, plastic fan and drive cover, Bluetooth drive, for indoor use			
101 Rolled steel motor frame, aluminum fan and drive cover, non-Bluetooth drive, for indoor use/outdoor/and Plenum use, includes (M) motor only			
Position 1 Version			
M Motor only			
T Top mount drive			
A Axial mount drive			
Position 2 Voltage			
0 190 / 380 3-phase			
1 115V 1-phase			
2 230V 3-phase			
3 380 – 400V 3-phase			
4 460V 3-phase			
5 575V 3-phase			
8 230V 1-phase			
Position 3 Power type			
H Horsepower			
Position 4,5 Power rating (HP)			
1 1			
2 2			
3 3			
5 5			
7P5 7.5			
11 11			
15 15			
Position 6 NEMA (IEC)			
D 140 (90)			
E 180 (112)			
F 210 (132)			
Position 7 Mounting			
B B34 Foot flange mount			
C B14 Footless flange mounted			
D B5 Footless flange mounted			
E B35 Foot flange mount			
F B3 Foot-mounted			
J 56J stainless threaded shaft			
S Square flange pump mount			
M JM pump shaft and face			
P JP pump close coupled			
Position 8 Base speed (r/min) NEMA IEC			
2 3000 3600 3000			
4 1500 1800 1500			
6 1000 1200 1000			
8 750 900 750			
Position 9 Variants			
+ “+” designates minor construction variation(s) (e.g. paint color, shaft length, etc.) that do not affect the performance safety of the product			

Rating plates

NEMA frame motor



1 - Baldor-Reliance ABB logo

2 - Catalog, specification number, manufacturing year

3 - Motor information

- Frame size, IP class, weight, power, frequency phase, duty, insulation class, rise, ambient rating, efficiency class, efficiency power factor, volts, amps, RPM, RPM maximum

4 - Motor drive tuning information

- BEMF (v), stator Rs inductance Ld (mH), Lq (mH)

5 - Speed range

IEC frame motor



6 - Bearing size

7 - Serial number

8 - Manufacturing place

9 - Product description

10 - Shaft ground brush installed

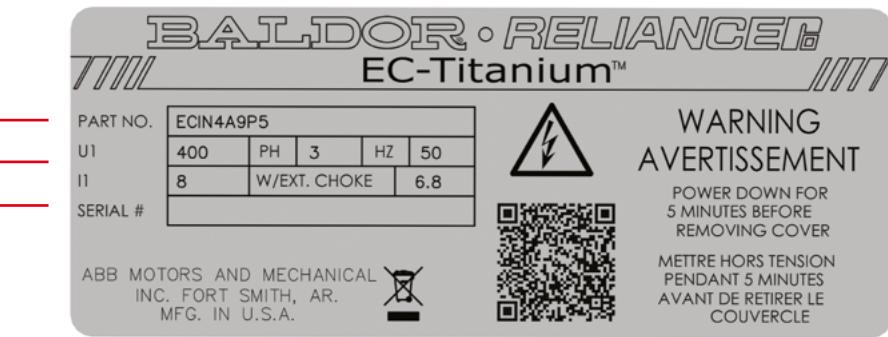
11 - cUL, CE, UKCA mark

12 - Manufacturing standard

13 - Drive model number

14 - Input voltage, phase, frequency

15 - Input current



Technical data

		BALDOR • RELIANCE® SHAFT GROUNDING BRUSH INSTALLED	IP54/IP55
Specification		Environmental	
Voltage & power requirements:	110V - 115Vac (+/- 10%) - 1-phase 200V - 240Vac (+/- 10%) - 1-phase 200V - 240Vac (+/- 10%) - 3-phase 380V - 480Vac (+/- 10%) - 3-phase 575V (+/- 10%) - 3-phase	TEFC/IP54/55 Motor with CE Enclosure Plastic: Type 12/IP54 Drive Aluminum: IP55 Drive -10 to 50°C	
Input frequency:	50/60 Hz	Operating temperature (de-rate output 2% per °C above 40 °C)	
Overload capacity:	150% for 1 minute (most models)	Storage temperature -40 to 70°C	
Switching frequency:	4kHz, 8Khz, 12kHz, 16kHz, 24kHz, 32kHz	Relative humidity 0 to 95% (non-condensing)	
Frame sizes:	NEMA 140, 180, 210 IEC 90, 112, 132	Vibration (operating) 1 G Peak at 20 Hz	
Efficiency:	IE5 per IEC TS60034-30-2	Vibration (non-operating) 0.2G Peak at 20 to 50Hz	
Mounting:	NEMA: Foot-mounted, C-Face, C-Face Footless IEC: B3, B14, B34, B35, B5	Maximum elevation Up to 1000 meters	
Analog references:	0-10Vdc, 0-20mAdc, 4-20mAdc	Elevation for de-rated operation Up to 2000 meters	
Digital inputs:	24Vdc - (1 = 8 - 30Vdc; 0 = 0 - 4Vdc)	De-rate above 1000 meters-1% for every 100 meters	
Input configurations:	2 Fixed DI's; 2 Configurable (AI or DI)		
Output relay:	No contact; 250Vac, 6A / 30Vdc, 5A		
Standards & certifications:	cUL, CE, UKCA		
Applications:		Drive features:	
<ul style="list-style-type: none"> Fans Pumps Compressors Blowers Unit handling conveyors HVAC systems Variable speed applications General purpose applications 		<ul style="list-style-type: none"> Permanent magnet PWM AC drive control Serial Modbus or BACnet (RJ45 or +/- terminal interface) 2 digital inputs, 2 configurable inputs (analog or digital), 1 relay output Designed for longevity with 2-year drive warranty 	
SP5+ motor features:		Standard product, motor and drive:	
<ul style="list-style-type: none"> Ultra premium IE5+ motor efficiency per IEC TS60034-30-2 FASR - Ferrite Assisted Synchronous Reluctance Rotor Class F insulation with Class B motor temperature rise IP54 and IP55 motor enclosure with shaft seal Internal grounding brush for bearing current mitigation 1600V/insulation system Designed for longevity with 3-year motor warranty For inverter use only per NEMA MG1 Part 31.4.4.2 		<ul style="list-style-type: none"> IP54 gasket plastic drive enclosure and fan cover Built-in ABB Ability and Bluetooth communication 	
Plenum use product, motor and drive:			
<ul style="list-style-type: none"> IP55 gasket aluminum drive enclosure and fan cover This version does not come with ABB Ability or Bluetooth communications 			

EC Titanium™ SP5+ Motor, Inverter Duty, three phase, TEFC (totally enclosed fan cooled) 1 thru 20Hp

ENERGY STAR 2024
Emerging Technology Award



Foot mount

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Apx. wt. (lb)	Full load efficiency	Voltage	Full load amps
1	1800	4000	143T	ECS101M0H1DF4	12.29	28	89.3%	230/460	2.3/1.2
2	1800	4000	143T	ECS101M0H2DF4	12.29	35	90.7%	230/460	4.5/2.3
3	1800	4000	145T	ECS101M0H3DF4	13.29	44	91.4%	230/460	7.0/3.5
5	1800	4000	182T	ECS101M0H3EF4	16.54	59	92.8%	230/460	7.3/3.7
7.5	1800	4000	143T	ECS101M0H5DF4	15.54	64	93.0%	230/460	10.4/5.2
10	1800	4000	182T	ECS101M0H5EF4	16.54	68	93.7%	230/460	10.5/5.3
15	1800	3000	213T	ECS101M0H7EF4	18.04	92	94.0%	230/460	17.5/8.8
20	1800	3000	213T	ECS101M0H7FF4	17.89	105	94.0%	230/460	17.4/8.7
10	1800	3000	213T	ECS101M0H10FF4	19.02	123	94.8%	230/460	22.0/11.0
15	1800	3000	215T	ECS101M0H15FF4	21.96	168	95.6%	230/460	34.8/17.4
20	1800	3000	215T	ECS101M4H20FF4	23.51	218	95.9%	460	21.6

Foot mount, 575V

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Apx. wt. (lb)	Full load efficiency	Voltage	Full load amps
1	1800	4000	140	ECS101M5H1DF4	12.29	28	89.3%	575	0.96
2	1800	4000	140	ECS101M5H2DF4	12.29	35	90.7%	575	1.84
3	1800	4000	140	ECS101M5H3DF4	13.29	44	91.4%	575	2.8
5	1800	4000	180	ECS101M5H3EF4	16.54	59	92.8%	575	2.96
7	1800	4000	180	ECS101M5H5DF4	15.54	64	93.0%	575	4.16
10	1800	4000	180	ECS101M5H5EF4	16.54	68	93.7%	575	4.24
15	1800	4000	180	ECS101M5H7EF4	18.04	92	94.0%	575	7.04
20	1800	3000	210	ECS101M5H7FF4	17.89	105	94.0%	575	6.96
10	1800	3000	210	ECS101M5H10FF4	19.02	123	94.8%	575	8.8
15	1800	3000	210	ECS101M5H15FF4	21.96	168	95.6%	575	13.92
20	1800	3000	210	ECS101M5H20FF4	23.51	218	95.9%	575	17.28

ENERGY STAR 2024
Emerging Technology Award



C-Face foot mount

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Apx. wt. (lb)	Full load efficiency	Voltage	Full load amps
1	1800	4000	143TC	ECS101M0H1DB4	12.29	28	89.3%	230/460	2.3/1.2
2	1800	4000	143TC	ECS101M0H2DB4	12.29	35	90.7%	230/460	4.5/2.3
3	1800	4000	145TC	ECS101M0H3DB4	13.29	44	91.4%	230/460	7.0/3.5
5	1800	4000	182TC	ECS101M0H3EB4	16.54	59	92.8%	230/460	7.3/3.7
7.5	1800	4000	143TC	ECS101M0H5DB4	15.54	64	93.0%	230/460	10.4/5.2
10	1800	4000	182TC	ECS101M0H5EB4	16.54	68	93.7%	230/460	10.5/5.3
15	1800	4000	184TC	ECS101M0H7EB4	18.04	92	94.0%	230/460	17.5/8.8
20	1800	3000	213TC	ECS101M0H7FB4	17.89	105	94.0%	230/460	17.4/8.7
10	1800	3000	213TC	ECS101M0H10FB4	19.02	123	94.8%	230/460	22.0/11.0
15	1800	3000	215TC	ECS101M0H15FB4	21.96	168	95.6%	230/460	34.8/17.4
20	1800	3000	215TC	ECS101M4H20FB4	23.51	218	95.9%	460	21.6

C-Face foot mount, 575V

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Voltage	Full load amps
1	1800	4000	140	ECS101M5H1DB4	12.29	28	89.3%	575	0.96
2	1800	4000	140	ECS101M5H2DB4	12.29	35	90.7%	575	1.84
3	1800	4000	140	ECS101M5H3DB4	13.29	44	91.4%	575	2.8
			180	ECS101M5H3EB4	16.54	59	92.8%	575	2.96
5	1800	4000	140	ECS101M5H5DB4	15.54	64	93.0%	575	4.16
			180	ECS101M5H5EB4	16.54	68	93.7%	575	4.24
7	1800	4000	180	ECS101M5H7EB4	18.04	92	94.0%	575	7.04
		3000	210	ECS101M5H7FB4	17.89	105	94.0%	575	6.96
10	1800	3000	210	ECS101M5H10FB4	19.02	123	94.8%	575	8.8
15	1800	3000	210	ECS101M5H15FB4	21.96	168	95.6%	575	13.92
20	1800	3000	210	ECS101M5H20FB4	23.51	218	95.9%	575	17.28

ENERGY STAR 2024
Emerging Technology Award

**C-Face footless**

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Voltage	Full load amps
1	1800	4000	143TC	ECS101M0H1DC4	12.29	28	89.3%	230/460	2.3/1.2
2	1800	4000	143TC	ECS101M0H2DC4	12.29	35	90.7%	230/460	4.5/2.3
3	1800	4000	145TC	ECS101M0H3DC4	13.29	44	91.4%	230/460	7.0/3.5
			182TC	ECS101M0H3EC4	16.54	59	92.8%	230/460	7.3/3.7
5	1800	4000	143TC	ECS101M0H5DC4	15.54	64	93.0%	230/460	10.4/5.2
			182TC	ECS101M0H5EC4	16.54	68	93.7%	230/460	10.5/5.3
7.5	1800	4000	184TC	ECS101M0H7EC4	18.04	92	94.0%	230/460	17.5/8.8
		3000	213TC	ECS101M0H7FC4	17.89	105	94.0%	230/460	17.4/8.7
10	1800	3000	213TC	ECS101M0H10FC4	19.02	123	94.8%	230/460	22.0/11.0
15	1800	3000	215TC	ECS101M0H15FC4	21.96	168	95.6%	230/460	34.8/17.4
20	1800	3000	215TC	ECS101M4H20FC4	23.51	218	95.9%	460	21.6

**EC Titanium™, top mount, integrated drive motor,
three phase, TEFC (totally enclosed fan cooled)**

1 thru 10 Hp

Foot mounted

Base speed Hp	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T ECS100T1H1DF4	12.37	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T ECS100T8H1DF4	12.37	35	89.3%	2.4	230	ECI8A7P0	7
2	1800	4000	145T ECS100T8H2DF4	13.37	41	90.7%	4.4	230	ECI8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V Output										
1	1800	4000	143T ECS100T2H1DF4	12.37	35	89.3%	2.4	230	ECI2A4P3	4.3
2	1800	4000	145T ECS100T2H2DF4	13.37	41	90.7%	4.3	230	ECI2A7P0	7
3	1800	4000	182T ECS100T2H3EF4	16.71	66	92.8%	7.3	230	ECI2A10P5	10.5
5	1800	4000	184T ECS100T2H5EF4	16.71	77	93.7%	10.5	230	ECI2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output										
1	1800	4000	143T ECS100T4H1DF4	12.37	35	89.3%	1.2	460	ECI4A2P2	2.2
2	1800	4000	145T ECS100T4H2DF4	13.37	41	90.7%	2.2	460	ECI4A2P2	2.2
3	1800	4000	145T ECS100T4H3DF4	13.37	47	91.4%	3.5	460	ECI4A4P1	4.1
			182T ECS100T4H3EF4	16.71	67	92.8%	3.7	460	ECI4A4P1	4.1
5	1800	4000	184T ECS100T4H5EF4	16.71	77	93.7%	5.3	460	ECI4A5P8	5.8
7.5	1800	4000	184T ECS100T4H7EF4	18.21	106	94.0%	8.8	460	ECI4A9P5	9.5
			3000 ECS100T4H7FF4	18.1	111	94.7%	8.6	460	ECI4A9P5	9.5
10	1800	3000	215T ECS100T4H10FF4	19.23	132	94.8%	11	460	ECI4A12P0	12



C-Face foot mounted

Base speed Hp	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T EECS100T1H1DC4	12.37	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T ECS100T8H1DC4	12.37	35	89.3%	2.4	230	ECI8A7P0	7
2	1800	4000	145T ECS100T8H2DC4	13.37	41	90.7%	4.4	230	ECI8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T ECS100T2H1DC4	12.37	35	89.3%	2.4	230	ECI2A4P3	4.3
2	1800	4000	145T ECS100T2H2DC4	13.37	41	90.7%	4.3	230	ECI2A7P0	7
3	1800	4000	182T ECS100T2H3EC4	16.71	66	92.8%	7.3	230	ECI2A10P5	10.5
5	1800	4000	184T ECS100T2H5EC4	16.71	77	93.7%	10.5	230	ECI2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output										
1	1800	4000	143T ECS100T4H1DC4	12.37	35	89.3%	1.2	460	ECI4A2P2	2.2
2	1800	4000	145T ECS100T4H2DC4	13.37	41	90.7%	2.2	460	ECI4A2P2	2.2



C-Face foot mounted (continued)

Base speed Hp	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
3	1800	4000	145T ECS100T4H3DC4	13.37	47	91.4%	3.5	460	ECI4A4P1	4.1
5	1800	4000	182T ECS100T4H3EC4	16.71	67	92.8%	3.7	460	ECI4A4P1	4.1
7.5	1800	4000	184T ECS100T4H5EC4	16.71	77	93.7%	5.3	460	ECI4A5P8	5.8
10	1800	3000	213T ECS100T4H7FC4	18.1	111	94.7%	8.6	460	ECI4A9P5	9.5



C-Face footless

Base speed Hp	C.H. speed RPM	NEMA frame	Catalog number	"C" dim. (in)	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output										
1	1800	4000	143T ECS100T1H1DC4	12.37	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output										

**EC Titanium™, axial mount, integrated drive motor,
three phase, TEFC (totally enclosed fan cooled)**

1 thru 7.5Hp



Foot mounted

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim.	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS100A1H1DF4	16.71	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS100A8H1DF4	16.71	35	89.3%	2.4	230	ECI8A7P0	7
2	1800	4000	145T	ECS100A8H2DF4	16.71	41	90.7%	4.4	230	ECI8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS100A2H1DF4	16.71	35	89.3%	2.4	230	ECI2A4P3	4.3
2	1800	4000	145T	ECS100A2H2DF4	16.71	41	90.7%	4.3	230	ECI2A7P0	7
3	1800	4000	182T	ECS100A2H3EF4	22.25	66	92.8%	7.3	230	ECI2A10P5	10.5
5	1800	4000	184T	ECS100A2H5EF4	22.25	77	93.7%	10.5	230	ECI2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output											
1	1800	4000	143T	ECS100A4H1DF4	16.71	35	89.3%	1.2	460	ECI4A2P2	2.2
2	1800	4000	145T	ECS100A4H2DF4	16.71	41	90.7%	2.2	460	ECI4A2P2	2.2
3	1800	4000	145T	ECS100A4H3DF4	16.71	47	91.4%	3.5	460	ECI4A4P1	4.1
5	1800	4000	182T	ECS100A4H3EF4	22.25	67	92.8%	3.7	460	ECI4A4P1	4.1
7.5	1800	4000	184T	ECS100A4H5EF4	22.25	77	93.7%	5.3	460	ECI4A5P8	5.8
7.5	1800	4000	184T	ECS100A4H7EF4	23.76	106	94.0%	8.8	460	ECI4A9P5	9.5



C-Face footless

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim.	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143TC	ECS100A1H1DC4	16.71	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143TC	ECS100A8H1DC4	16.71	35	89.3%	2.4	230	ECI8A7P0	7
2	1800	4000	145TC	ECS100A8H2DC4	16.71	41	90.7%	4.4	230	ECI8A7P0	7
3-phase 200...240V AC (+/-10%) - 3 Phase 230V output											
1	1800	4000	143TC	ECS100A2H1DC4	16.71	35	89.3%	2.4	230	ECI2A4P3	4.3
2	1800	4000	145TC	ECS100A2H2DC4	16.71	41	90.7%	4.3	230	ECI2A7P0	7
3	1800	4000	182TC	ECS100A2H3EC4	22.25	66	92.8%	7.3	230	ECI2A10P5	10.5
5	1800	4000	184TC	ECS100A2H5EC4	22.25	77	93.7%	10.5	230	ECI2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output											
1	1800	4000	143TC	ECS100A4H1DC4	16.71	35	89.3%	1.2	460	ECI4A2P2	2.2
2	1800	4000	145TC	ECS100A4H2DC4	16.71	41	90.7%	2.2	460	ECI4A2P2	2.2
3	1800	4000	145TC	ECS100A4H3DC4	16.71	47	91.4%	3.5	460	ECI4A4P1	4.1
5	1800	4000	182TC	ECS100A4H3EC4	22.25	67	92.8%	3.7	460	ECI4A4P1	4.1
7.5	1800	4000	184TC	ECS100A4H5EC4	22.25	77	93.7%	5.3	460	ECI4A5P8	5.8
7.5	1800	4000	184TC	ECS100A4H7EC4	23.76	106	94.0%	8.8	460	ECI4A9P5	9.5



C-Face foot mounted

Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim.	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143TC	ECS100A1H1DB4	16.71	36	89.3%	2.4	115	ECI1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143TC	ECS100A8H1DB4	16.71	35	89.3%	2.4	230	ECI8A7P0	7
2	1800	4000	145TC	ECS100A8H2DB4	16.71	41	90.7%	4.4	230	ECI8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143TC	ECS100A2H1DB4	16.71	35	89.3%	2.4	230	ECI2A4P3	4.3
2	1800	4000	145TC	ECS100A2H2DB4	16.71	41	90.7%	4.3	230	ECI2A7P0	7
3	1800	4000	182TC	ECS100A2H3EB4	22.25	66	92.8%	7.3	230	ECI2A10P5	10.5
5	1800	4000	184TC	ECS100A2H5EB4	22.25	77	93.7%	10.5	230	ECI2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output											
1	1800	4000	143TC	ECS100A4H1DB4	16.71	35	89.3%	1.2	460	ECI4A2P2	2.2
2	1800	4000	145TC	ECS100A4H2DB4	16.71	41	90.7%	2.2	460	ECI4A2P2	2.2
3	1800	4000	145TC	ECS100A4H3DB4	16.71	47	91.4%	3.5	460	ECI4A4P1	4.1
5	1800	4000	182TC	ECS100A4H3EB4	22.25	67					

EC Titanium™, plenum use, top mount**integrated drive motor, TEFC (totally enclosed fan cooled)**

1 thru 10Hp



Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim.	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101T1H1DF4	16.71	36	89.3%	2.4	115	ECIN1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101T8H1DF4	16.71	35	89.3%	2.4	230	ECIN8A7P0	7
2	1800	4000	145T	ECS101T8H2DF4	16.71	41	90.7%	4.4	230	ECIN8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101T2H1DF4	16.71	35	89.3%	2.4	230	ECIN2A4P3	4.3
2	1800	4000	145T	ECS101T2H2DF4	16.71	41	90.7%	4.3	230	ECIN2A7P0	7
3	1800	4000	182T	ECS101T2H3EF4	22.25	66	92.8%	7.3	230	ECIN2A10P5	10.5
5	1800	4000	184T	ECS101T2H5EF4	22.25	77	93.7%	10.5	230	ECIN2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output											
1	1800	4000	143T	ECS101T4H1DF4	16.71	35	89.3%	1.2	460	ECIN4A2P2	2.2
2	1800	4000	145T	ECS101T4H2DF4	16.71	41	90.7%	2.2	460	ECIN4A2P2	2.2
3	1800	4000	145T	ECS101T4H3DF4	16.71	47	91.4%	3.5	460	ECIN4A4P1	4.1
5	1800	4000	182T	ECS101T4H3EF4	22.25	67	92.8%	3.7	460	ECIN4A4P1	4.1
7.5	1800	4000	184T	ECS101T4H5EF4	22.25	77	93.7%	5.3	460	ECIN4A5P8	5.8
7.5	1800	4000	213T	ECS101T4H7FF4	23.76	106	94.0%	8.8	460	ECIN4A9P5	9.5
10	1800	3000	215T	ECS101T4H10FF4	19.23	132	94.8%	11	460	ECIN4A12P0	12

EC Titanium™, plenum use, axial mount integrated drive motor, TEFC (totally enclosed fan cooled)

1 thru 7.5Hp



Hp	Base speed RPM	C.H. speed RPM	NEMA frame	Catalog number	"C" dim.	Aprx. wt. (lb)	Full load efficiency	Motor input amps	Drive input voltage	Drive module	Drive output amps
1-phase 100V...115V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101A1H1DF4	16.71	36	89.3%	2.4	115	ECIN1A3P2	3.2
1-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101A8H1DF4	16.71	35	89.3%	2.4	230	ECIN8A7P0	7
2	1800	4000	145T	ECS101A8H2DF4	16.71	41	90.7%	4.4	230	ECIN8A7P0	7
3-phase 200...240V AC (+/-10%) - 3-phase 230V output											
1	1800	4000	143T	ECS101A2H1DF4	16.71	35	89.3%	2.4	230	ECIN2A4P3	4.3
2	1800	4000	145T	ECS101A2H2DF4	16.71	41	90.7%	4.3	230	ECIN2A7P0	7
3	1800	4000	182T	ECS101A2H3EF4	22.25	66	92.8%	7.3	230	ECIN2A10P5	10.5
5	1800	4000	184T	ECS101A2H5EF4	22.25	77	93.7%	10.5	230	ECIN2A10P5	10.5
3-phase 380...480V AC (+/-10%) - 3-phase 460V output											
1	1800	4000	143T	ECS101A4H1DF4	16.71	35	89.3%	1.2	460	ECIN4A2P2	2.2
2	1800	4000	145T	ECS101A4H2DF4	16.71	41	90.7%	2.2	460	ECIN4A2P2	2.2
3	1800	4000	145T	ECS101A4H3DF4	16.71	47	91.4%	3.5	460	ECIN4A4P1	4.1
5	1800	4000	182T	ECS101A4H3EF4	22.25	67	92.8%	3.7	460	ECIN4A4P1	4.1
7.5	1800	4000	184T	ECS101A4H5EF4	22.25	77	93.7%	5.3	460	ECIN4A5P8	5.8
7.5	1800	4000	184T	ECS101A4H7EF4	23.76	106	94.0%	8.8	460	ECIN4A9P5	9.5

EC Titanium SP5+ IEC motor, Inverter Duty, IC411

0.75 thru 11kW

IP55



B3 foot mount, 190/380V AC (+/- 10%)

kW	Base speed RPM	C.H. speed RPM	IEC frame	Catalog number	"L" dim.	Aprx. wt. (kg)	Full load efficiency	Eff class	Full load amps
0.75	1500	3000	90	ECS101M0K0P8DF4	338	18	87.7%	IE5	2.6/1.3
1.5	1500	3000	90	ECS101M0K1P5DF4	338	19	89.1%	IE5	5.2/2.6
2.2	1500	3000	112	ECS101M0K2P2DF4	363	25	91.1%	IE5	8/4
3	1500	3000	112	ECS101M0K3EF4	410	30	92.4%	IE5	10.6/5.3
4	1500	3000	112	ECS101M0K4EF4	410	30	92.4%	IE5	13.6/6.8
5.5	1500	3000	132	ECS101M0K5P5FF4	447	57	92.7%	IE5	21/10.5
7.5	1500	3000	132	ECS101M0K7P5FF4	476	76	93.8%	IE5	24.2/13.6
11	1500	3000	132	ECS101M0K11FF4	551	98	94.4%	IE5	39/19.5

B14 footless, 190/380V AC (+/- 10%)

kW	Base speed RPM	C.H. speed RPM	IEC frame	Catalog number	"L" dim.	Aprx. wt. (kg)	Full load efficiency	Eff class	Full load amps
0.75	1500	3000	90	ECS101M0K0P8DC4	324	18	87.7%	IE5	2.6/1.3
1.5	1500	3000	90	ECS101M0K1P5DC4	324	19	89.1%	IE5	5.2/2.6
2.2	1500	3000	112	ECS101M0K2P2DC4	349	25	91.1%	IE5	8/4
3	1500	3000	112	ECS101M0K3EC4	403	30	92.4%	IE5	10.6/5.3
4</									

EC Titanium, top mount, integrated drive motor, IE5+, IC411

0.75 thru 5.5kW

IP55

**B3 foot mount**

kW	Base speed RPM	C.P. speed RPM	IEC frame	Catalog number	"L" dim. wt. (kg)	Aprx. efficiency	Full load efficiency	Eff class	Motor input amps	Drive module	Drive output amps
1-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
1.5	1500	3000	90	ECS101T8K1P5DF4	314	23	89.1%	IE5	2.8	ECIN8A7P0	7
3-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101T3K0P8DF4	314	20	87.7%	IE5	2.6	ECIN2A4P3	4.3
1.5	1500	3000	90	ECS101T3K1P5DF4	314	23	89.1%	IE5	5.2	ECIN2A7P0	7.0
2.2	1500	3000	112	ECS101T3K2P2EF4	424	39	91.4%	IE5	8	ECIN2A10P5	10.5
3-phase 50 HZ, 400V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101T3K0P8DF4	314	20	87.7%	IE5	1.3	ECIN4A2P2	2.2
1.5	1500	3000	90	ECS101T3K1P5DF4	314	23	89.1%	IE5	2.6	ECIN4A5P8	5.8
2.2	1500	3000	112	ECS101T3K2P2EF4	424	39	91.4%	IE5	4.4	ECIN4A5P8	5.8
3	1500	3000	112	ECS101T3K3EF4	424	45	92.4%	IE5	5.3	ECIN4A9P5	9.5
4	1500	3000	112	ECS101T3K4EF4	424	45	92.4%	IE5	6.8	ECIN4A9P5	9.5
5.5	1500	3000	132	ECS101T3K5P5FF4	460	67	92.9%	IE5	10.5	ECIN4A12P0	12

EC Titanium, axial mount, integrated drive motor, IE5+, IC411

0.75 thru 4kW

IP55

**B3 foot mount**

kW	Base speed RPM	C.P. speed RPM	IEC frame	Catalog number	"L" dim. wt. (kg)	Aprx. efficiency	Full load efficiency	Eff class	Motor input amps	Drive module	Drive output amps
1-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
1.5	1500	3000	90	ECS101A8K1P5DF4	424	23	89.1%	IE5	2.8	ECIN8A7P0	7
3-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101A3K0P8DF4	424	20	87.7%	IE5	2.6	ECIN2A4P3	4.3
1.5	1500	3000	90	ECS101A3K1P5DF4	424	23	89.1%	IE5	5.2	ECIN2A7P0	7.0
2.2	1500	3000	112	ECS101A3K2P2EF4	565	39	91.4%	IE5	8	ECIN2A10P5	10.5
3-phase 50 HZ, 400V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101A3K0P8DF4	434	20	87.7%	IE5	1.3	ECIN4A2P2	2.2
1.5	1500	3000	90	ECS101A3K1P5DF4	434	23	89.1%	IE5	2.6	ECIN4A5P8	5.8
2.2	1500	3000	112	ECS101A3K2P2EF4	434	39	91.4%	IE5	4.4	ECIN4A5P8	5.8
3	1500	3000	112	ECS101A3K3EF4	565	45	92.4%	IE5	5.3	ECIN4A9P5	9.5
4	1500	3000	112	ECS101A3K4EF4	565	45	92.4%	IE5	6.8	ECIN4A9P5	9.5

B14 footless

kW	Base speed RPM	C.P. speed RPM	IEC frame	Catalog number	"L" dim. wt. (kg)	Aprx. efficiency	Full load efficiency	Eff class	Motor input amps	Drive module	Drive output amps
1-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
1.5	1500	3000	90	ECS101T8K1P5DC4	301	23	89.1%	IE5	2.8	ECIN8A7P0	7
3-phase 50 HZ, 400V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101T3K0P8DC4	301	20	87.7%	IE5	1.3	ECIN4A2P2	2.2
1.5	1500	3000	90	ECS101T3K1P5DC4	301	20	89.1%	IE5	2.6	ECIN4A5P8	5.8
2.2	1500	3000	112	ECS101T3K2P2EC4	408	39	91.4%	IE5	4.4	ECIN4A5P8	5.8
3	1500	3000	112	ECS101T3K3EC4	408	45	92.4%	IE5	5.3	ECIN4A9P5	9.5
4	1500	3000	112	ECS101T3K4EC4	408	45	92.4%	IE5	6.8	ECIN4A9P5	9.5
5.5	1500	3000	132	ECS101T3K5P5FC4	454	67	92.9%	IE5	10.5	ECIN4A12P0	12

B14 footless

kW	Base speed RPM	C.P. speed RPM	IEC frame	Catalog number	"L" dim. wt. (kg)	Aprx. efficiency	Full load efficiency	Eff class	Motor input amps	Drive module	Drive output amps
1-phase 50 HZ, 230V AC (+/-10%) - The power ratings are valid at nominal voltage											
1.5	1500	3000	90	ECS101A8K1P5DC4	424	23	89.1%	IE5	2.8	ECIN8A7P0	7
3-phase 50 HZ, 400V AC (+/-10%) - The power ratings are valid at nominal voltage											
0.75	1500	3000	90	ECS101A3K0P8DC4	434	20	87.7%	IE5	1.3	ECIN4A2P2	2.2
1.5	1500	3000	90	ECS101A3K1P5DC4	434	23	89.1%	IE5	2.6	ECIN4A5P8	5.8
2.2	1500	3000	112	ECS101A3K2P2EC4	434	39	91.4%	IE5	4.4	ECIN4A5P8	5.8
3	1500	3000	112	ECS101A3K3EC4	565	45	92.4%	IE5	5.3	ECIN4A9P5	9.5
4	1500	3000	112	ECS101A3K4EC4	565	45	92.4%	IE5	6.8	ECIN4A9P5	9.5

B5 footless

kW

EC Titanium motor only configuration

for expanded capabilities

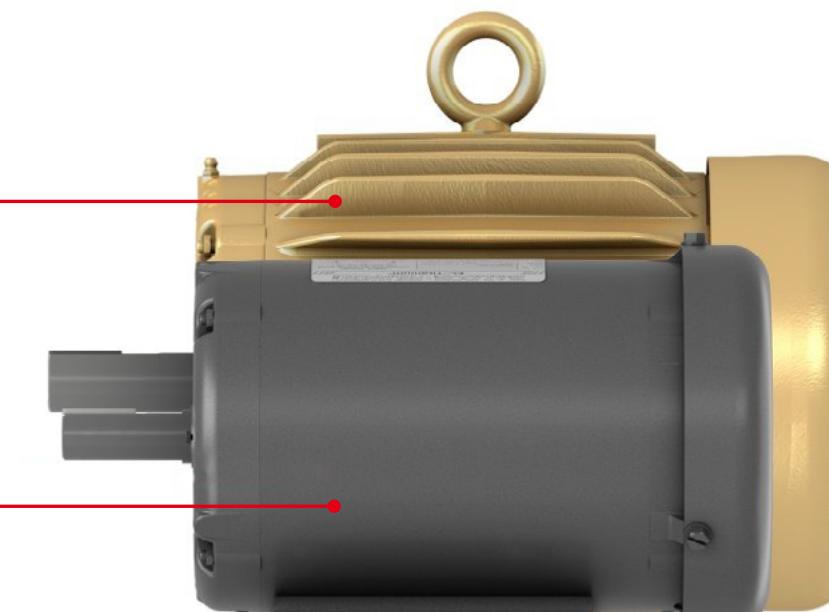
Easy upgrade of existing installations:
Drop-in replacement for NEMA 56 to 210 frames



Compact and light
EC Titanium is safer to install because they are light weight and available in smaller frame sizes.
This reduces the need for heavy structural support requirements.

5 Hp induction motor
EM3665T NEMA frame
107lbs

ECS101M0H5DF4
140 NEMA frame
64lbs



Programming and condition monitoring

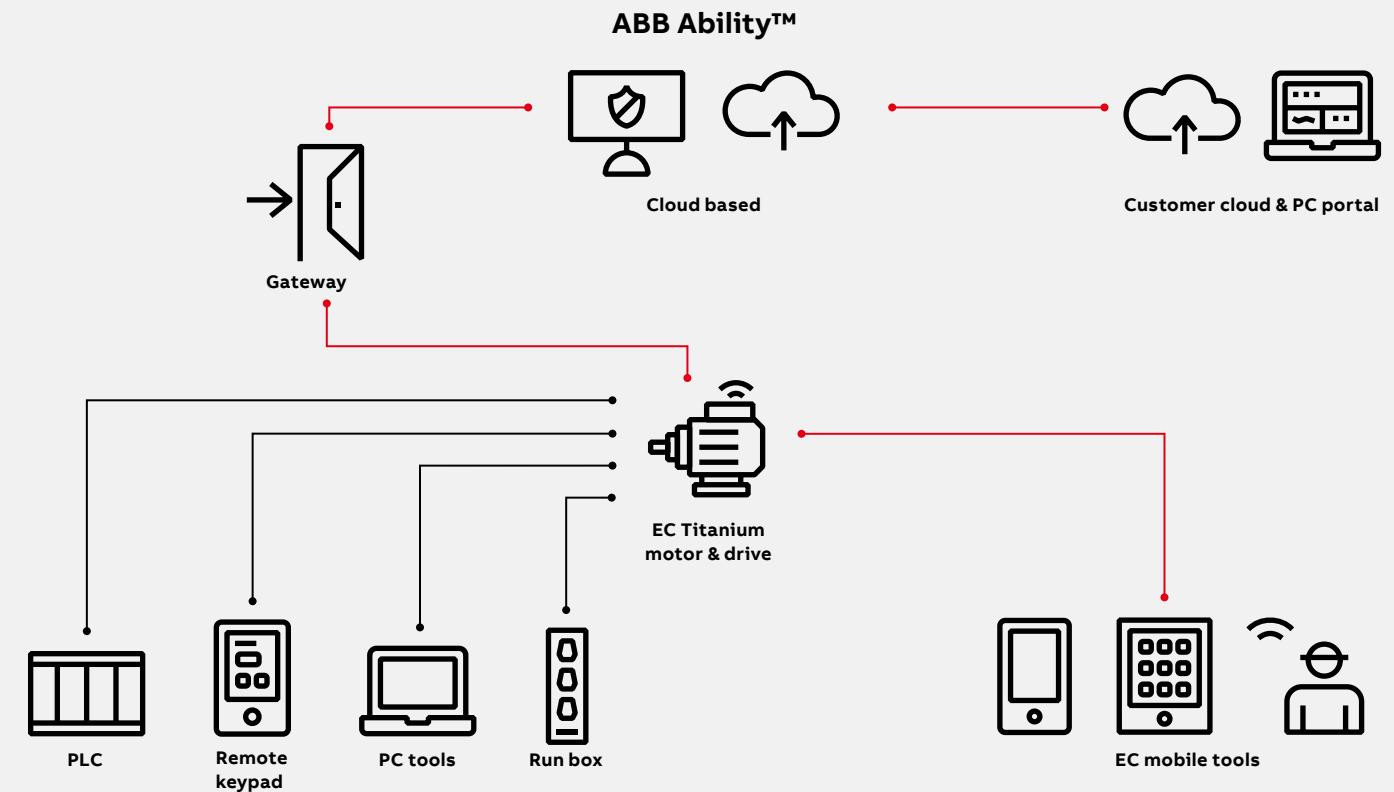
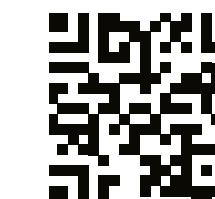


ABB Ability Drive parameters

- Drive module temperature
- Drive control board temperature
- DC bus voltage
- Estimated speed
- Output frequency
- Output voltage
- DC bus ripple
- Status word/fault word
- DI status word
- Motor power
- Motor torque

For EC Titanium eTools, scan the QR code for information.



EC Titanium, programming keypad & cable kits

Catalog number

ECS100L

Remote Keypad

Designed for programming and control of the EC Titanium.
Kits comes with a 3-meter RJ45 cable



ECS100B

COPYSTICK2

The COPYSTICK2 is used for fast and accurate repeat drive programming.



ECS100U

RJ45 to USB Cable

PC connection kit, isolated RJ45 to USB cable for ECM software tools.
This kit is used when programming the drive with the PC software tools.



Energy savings

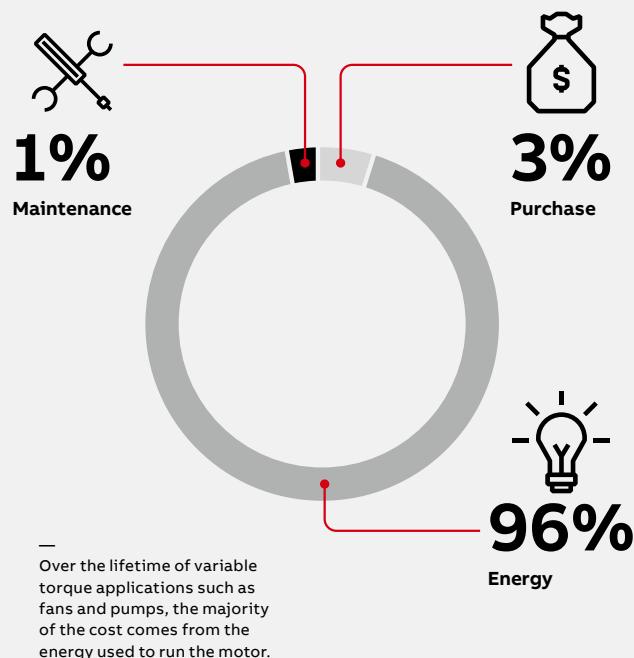
How does this translate to power consumption reduction and energy savings?

Here are results on actual customer test result in the US market; however, depending on energy costs, these savings could be significantly greater.

Induction motor (IE3)	EC Titanium FASR motor (IE5)
Average unit consumption per day (based on seven-day average) 57.7 kWh	Average unit consumption per day (based on seven-day measurement) 45.1 kWh
Estimated annual energy cost (based on 0.25 \$ per kWh) \$ 5,265	Estimated annual energy cost (based on 0.25 \$ per kWh) \$ 4,115
Energy cost savings per motor	\$ 1,150



Better lifetime efficiency for the whole system
EC Titanium motors and integrated drives enable better overall system efficiency. With pumps and fans, which are usually run at partial loads, this translates to better wire-to-water and wire-to-air efficiency. And, although replacing older motor systems with more efficient ones does carry an initial financial cost, the long-term savings over the lifetime of the application far outweigh the cost of purchase. In fact, the initial investment can often be paid back in as little as one to three years.



Sustainability

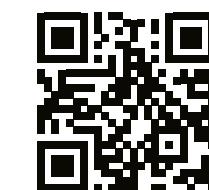
ABB has set ourselves the ambitious target of helping our customers reduce their annual CO₂ emissions in excess of 100 megatonnes by 2030. This is equivalent to the annual emissions of 30 million combustion cars. An example of how this can be accomplished is the ability of ABB drives powering electric motors that can reduce electricity consumption by up to 25%.

Smart sensor for energy consumption

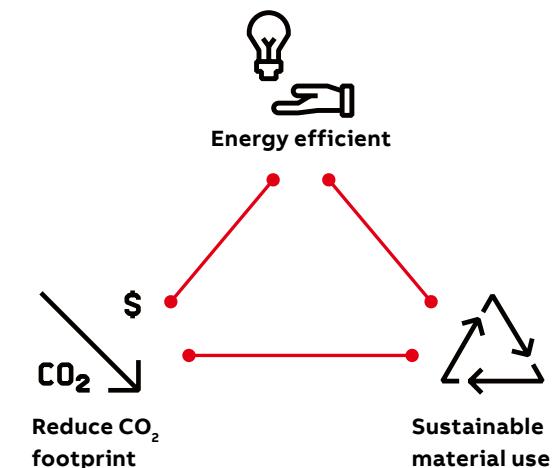
The ABB Ability™ calculates several parameters of datapoints including speed, motor power and torque. With this information, we can accurately calculate energy usage and help our customers optimize their operations.



White paper:
Improving end-to-end
system efficiency



Learn more about:
Energy Efficiency
Movement



Time to make a difference Join the Energy Efficiency Movement



45%
Electric motors consume
over 45% of the world's
electricity.



x2
By 2040 the number of
motors will double.



10%
Adoption of high-efficiency
motor systems would cut
global electricity
consumption by up to 10%.



Changing just one
motor can make a
difference.

ABB, your global value partner

Partnering with ABB gives you access to some of the world's most innovative technology and thinking.

Global reach

ABB operates in over 100 countries with its own manufacturing, logistics and sales operations together with a wide network of local channel partners that can quickly respond to your needs. They bring our products and services straight to your front door. ABB channel partners have in-depth knowledge of local markets and are conversant with the defined ABB products and processes.

Energy efficiency

ABB has what it takes to help every industry and application reach new levels of efficiency and energy savings even under the most demanding conditions. Combining the best available materials with superior technology, our motors are designed to operate reliably no matter how challenging the process or application, and to have low life cycle costs.





ABB Motors and Mechanical Inc.
5711 R.S. Boreham, Jr. Street
Fort Smith, AR 72901
Ph: 1.479.646.4711

new.abb.com/motors-generators