East West

MOTOR SOLUTIONS

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About East West

SINCE 2001, East West Manufacturing® has been a trusted, concept-to-scale Electronics Manufacturing Services (EMS) partner for some of the world's most recognizable brands and new disruptive players. As a proactive, full-solution partner, East West provides complete end-to-end services solving the most complex design, manufacturing and supply chain challenges. With more than 2,500 employees at 9 facilities in 7 countries, East West's global team serves a broad spectrum of dedicated end markets knowing that the quality products made today can truly make a difference for all us.

MOTOR SOLUTIONS THAT MAKE A DIFFERENCE

East West manufacturers over two million motors each year. Currently, there are more than 10 million motors in the field. Our motors business unit specializes in designing custom motors geared specifically to any customer application. We offer motor solutions from our catalog of products, or we'll partner with you to develop semi- to fully customized designs that meet both cost and performance requirements. And whichever partnership you choose, our team of highly skilled motor engineers become an extension of your overburdened engineering team delivering expertise in motor designs and advanced manufacturing. Our goal at East West is continue to develop motors technology for AC, DC, and EC motors.

VERTEX®
EC MOTORS
The First of its Kind

The Vertex® EC Motor Series is the first of its kind. This motor has been developed with composite material for optimized geometry, competitive pricing, and lower weight. Interior permanent magnets (IPMs) – which are less likely to detach due to centrifugal force – allow for higher torque/speed and significant energy savings.

The Most Innovative Motor Yet

East West manufacturers over two million motors each year, and there are more than 10 million motors in the field. Our motors business unit specializes in designing custom motors geared specifically to any customer application.

YOUR SINGLE SKU SOLUTION

This ideal single SKU motor offers an extremely wide peak efficiency range with maximum efficiency of 88%. One motor SKU can be used to cover a range of application duty points while optimized electro-magnetics enable maximum output power to be achieved from 1,200 to 2,000 RPM covering both standard 4-pole and 6-pole applications. Vertex 1/2 HP can be used for 120/208-277 VAC, 50/60 Hz input with consistent performance throughout the nominal voltage range without manual configuration.

We offer a range of solutions to meet your unique motor needs. Each Vertex model is available in three efficiency tiers. Key motor features of all efficiency tiers include:

- Over-temperature protected electronics including motor derating
- Control interface is SELV (Safety Extra Low Voltage)
- Soft start allowing for controlled ramp-up to full speed (programmable)
- Over current protection
- Locked rotor protection
- Control method – torque control, speed control
- Direction of rotation – programmable and reversible
- Internal fusing
- Sensorless motor – uses FOC (Field Oriented Control)
- Approvals – UL 1004-7, UL 60730-1, UL CCN LZGH2/8, CAN CSA E60730-1, CSA C22.2 NO. 77-14, CSA C22.2 NO. 100-14

PATENTED ACTIVE COOLING

East West's patented active cooling system (illustrated above) helps the motor achieve a significant increase in power density. For the Vertex 1/2 HP, this means providing the same performance as a typical 48-frame EC motor but in a 42-frame package size.*

*S. Andrew Semidey, "Electronically commutated DC motor," U.S. Patent 11552 520, Jan. 10, 2023.

Learn more about Vertex

FEATURES

- High voltage inputs (120/208–277 VAC) for 3-speed/torque operation
- Low voltage inputs (12–30 VAC or 3.3–30 VDC) for 4-speed/torque operation
- 0–10 VDC/PWM (pulse width modulation) for variable speed/torque operation
- Tachometer output/diagnostic output (1-pulse/rev)
- 3.3 VDC output (50 mA max) to power digital inputs when external controller does not have this output as an option
- Motor configuration via serial communication for PC and Bluetooth dongle for smartphone
- Possible elimination of interface modules when connecting to 3rd party controllers
- Soft start allowing for controlled ramp-up to full speed
- Control interface is a SELV (Safety Extra Low Voltage) system
- Over-temperature protected electronics

MOTOR SPECIFICATIONS

Tri Voltage	120/208–277 VAC 50/60 Hz
Speed Range	300 to 2000 RPM
Insulation	Class F
Bearing Type	Sealed ball bearing
Controller	Integrated
Direction of Rotation	Reversible via user configuration Default direction is CCWDE
Electronic Safety Features	Locked rotor Over-current Over-temperature protection
Mounting Options	Belly band: single shaft Resilient mount: dual shaft Custom mounting: upon request
Approvals	UL 1004-7, UL 60730-1, UL CCN LZGH2/8 CAN CSA E60730-1, CSA C22.2 NO. 77-14, CSA C22.2 NO. 100-14

MOTOR MATERIALS

Motor Casing, Electronics Housing & Over-molded Stator	PET composite with flammability rating UL94-5VA
Mounting Bracket	G30 zinc plated steel
Shaft	#45 steel coated with SR70 rust proof oil

No one solution fits all

That's why we designed our Vertex motors in three efficiency tiers, which offer you the flexibility to choose the option best suited to your needs.

1/2 HP EFFICIENCY TABLE

	PREMIUM	HIGH	STANDARD
Peak Efficiency	**88%**	87%	85%
Max. Output Power	**450 W**	373 W	373 W
Max. Power Input	570/560–544 W	480/477–466 W	510/508–492 W
Current Draw	6.5/4.0-3.0 A	5.5/3.4-2.5	5.6/3.6-2.9 A
Operating Temp.	-20 °C to **60 °C** **	-20 °C to 50 °C **	-20 °C to 40 °C **
Rated Torque	3.6 Nm @ 1200 RPM 2.2 Nm @ 2000 RPM	3 Nm @ 1200 RPM 1.8 Nm @ 2000 RPM	3 Nm @ 1200 RPM 1.8 Nm @ 2000 RPM
Winding Material	Copper	Copper	Aluminum
Magnet Material	Neodymium-Ferrite	Ferrite	Ferrite

1/3 HP EFFICIENCY TABLE

	PREMIUM	HIGH	STANDARD
Peak Efficiency	**87%**	85%	84%
Max. Output Power	**299 W**	249 W	249 W
Max. Power Input	341/335–334 W	300/296–295 W	320/314–313 W
Current Draw	4.1/2.6-2.0 A	3.6/2.3-1.8 A	3.8/2.4-1.9 A
Operating Temp.	-20 °C to **60 °C** **	-20 °C to 50 °C **	-20 °C to 40 °C **
Rated Torque	2.4 Nm @ 1200 RPM 1.4 Nm @ 2000 RPM	2 Nm @ 1200 RPM 1.2 Nm @ 2000 RPM	2 Nm @ 1200 RPM 1.2 Nm @ 2000 RPM
Winding Material	Copper	Copper	Aluminum
Magnet Material	Neodymium-Ferrite	Ferrite	Ferrite

1/4 HP EFFICIENCY TABLE

	PREMIUM	HIGH	STANDARD
Peak Efficiency	**86%**	84%	81%
Max. Output Power	**225 W**	187 W	187 W
Max. Power Input	253/256–250 W	238/234–233 W	261/255–254 W
Current Draw	3.2/2-1.6 A	2.9/1.8-1.5 A	3.0/2.0-1.6 A
Operating Temp.	-20 °C to **60 °C** **	-20 °C to 50 °C **	-20 °C to 40 °C **
Rated Torque	1.8 Nm @ 1200 RPM 1.1 Nm @ 2000 RPM	1.5 Nm @ 1200 RPM 0.9 Nm @ 2000 RPM	1.5 Nm @ 1200 RPM 0.9 Nm @ 2000 RPM
Winding Material	Copper	Copper	Aluminum
Magnet Material	Neodymium-Ferrite	Ferrite	Ferrite

**Higher max. ambient temperature possible depending upon application requirements. Consult with your EW Account Manager for further details.

VERTEX®
DATA MANAGEMENT
Real Data in Real Time

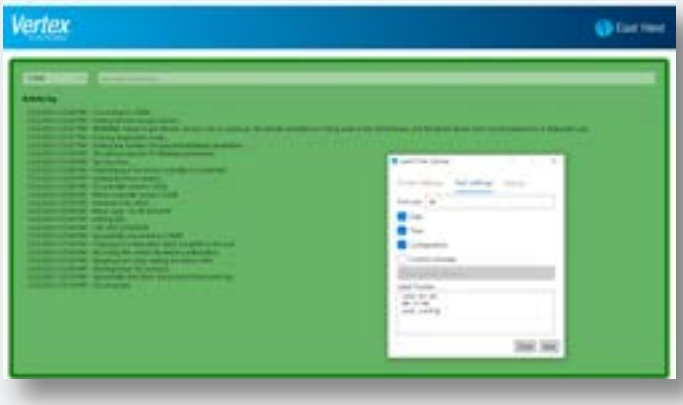
The Vertex app's real-time control capability provides real data in real-time, empowering users to fine-tune performance and make decisions with speed and precision. This ensures engineers can focus on optimizing motor performance without unnecessary complexity.

Vertex®
EC MOTOR SERIES

Effortless User Experience

EFFORTLESS DATA CAPTURE

Our app collects wireless data via Bluetooth, allowing for seamless testing in the application and eliminating the need for cumbersome wiring. By enabling an unobstructed performance analysis, our app enhances usability and ensures accuracy under real-world conditions.



SIMPLIFY YOUR WORKFLOW

Easily migrate final setpoints from the lab to production-ready files, generate barcodes for seamless production line scanning, and automatically trigger label printing - all through a user-friendly interface with supervisor controls.

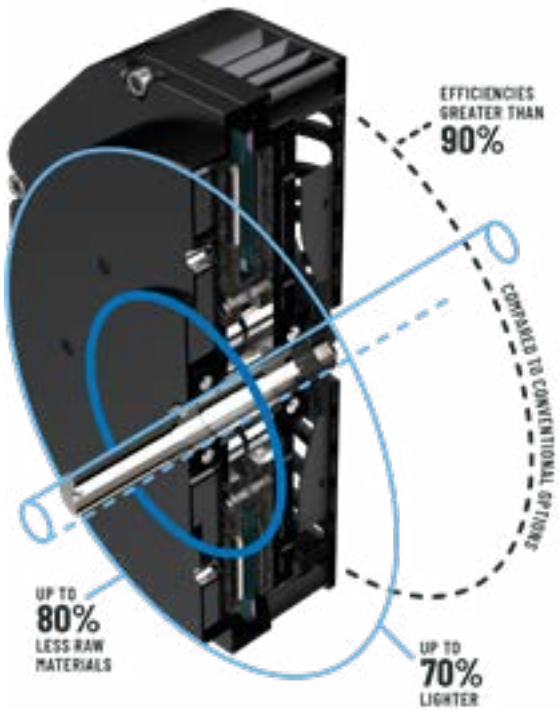
PCB STATOR TECHNOLOGY

East West | ecm PCB STATOR TECH

Our East West Motors business unit has strategically partnered with ECM PCB Stator Tech to leverage ECM's award-winning PrintStator Motor CAD optimization platform. PCB Stator technology eliminates the need for copper windings used in conventional machines, creating a new type of axial flux electric motor for the next 100 years of electrification.

PCB Strator Technology Innovations

PCB Stator technology innovations allow for the optimization of copper geometries and winding patterns that ensures high efficiency with minimal environmental impact. PCB Stator motors designed via PrintStator are up to 70% lighter than conventional options while achieving efficiencies in the excess of 90% and requiring just 20% of the raw materials. PCB Stator motors can achieve power of up to 20kW, speeds up to 30,000 RPM, and torque ratings of up to 100Nm.



The advantage of PCB Stator Technology is vast. Key PCB Stator motor features include: .

- **High Efficiency** – PCB Stator technology achieves efficiencies exceeding 90%; this integration results in reduced operating costs, extending battery life and lowering carbon footprint
- **Streamlined Motor Design** – ECM's PrintStator software streamlines motor design by rapidly generating prototype-ready designs so engineers can move quickly from concept to testing
- **Increased Durability** – PCB Stator's continuous coil design and fully encapsulated windings prevent common failures found in traditional motors, boosting overall durability (rigorous HALT testing validates their reliability)
- **Superior Quality of Motion** – PCB Stator motors offer unparalleled motion quality, free from cogging while delivering smooth torque, and eradicating cogging through their innovative air core design and utilization of iron-free PCB Stators
- **High Torque Density** – Powered by PrintStator software, efficient copper utilization yields torque-dense machines that enable high-power density with minimal axial length and weight (multiple PCB motors can be stacked on a single shaft)
- **Low Noise & EMI** – The encapsulation of PCB Stator coils within a composite structure effectively eliminates acoustic noise and reliability issues caused by vibration and other forces affecting traditional stator windings (results are up to 30dB quieter)
- **Increased Thermal Performance** – PCB Stator motors feature patented thermal management for safe continuous operation; using a continuous copper path, heat is conducted from the stator's center to the case's edge and then dissipates into the environment
- **Sustainable** – Through meticulous optimization of magnet and steel mass, plus the use of PCB Stators requiring less copper, these motors set a new standard for resource efficiency (PCB Stator motors reduce material usage by up to 80%)

EC MOTORS AND FANS

Our ECR2 motor is designed to be a drop-in replacement for shaded pole motors in commercial refrigeration and uses 2/3 less power than shaded pole motors making the motor up to 70% energy efficient. ECR2 motors have a design life of 10 years and offer near silent operation. The motor is also available in a integrated axial fan assemblies featuring patented 3D sculpted blades to guide the air gently with reduced edge noise.

Advanced Refrigeration Motors

East West manufacturers over two million motors each year. Our motors business unit specializes in designing custom motors geared specifically to any customer application.

LET'S START A CONVERSATION

We offer motor solutions from our catalog of products, or we'll partner with you to develop semi- to fully customized designs that meet both cost and performance requirements. No matter how unique the project, East West can help you solve it.

THE ECR2 SERIES

Get the most advanced refrigeration motor. Using a smart-control programming device, an ECR2 can be programmed to cover multiple SKUs that allows for customization of power range, dual voltage, variable speed, and other behaviors such as reversibility or two-speed operation.

The ECR2 is used in bottle coolers, reach-in display cases, vending machines, under counter cabinets, and other refrigerated equipment. Key ECR2 features include:

- High efficiency – up to 70%
- High power factor – up to 0.95
- RoHS and REACH compliant
- SKU reduction – reduces inventory and boots economies of scale
- Highly reliable – design life L10 of 90,000 hours

INTEGRATED FAN PACK

Our axial fan assemblies allow a single product to supply the required airflow for any application at high efficiency. Benefits for using axial fan assemblies include aerodynamic blade and basket, high efficiency, and low noise.

ECR2 Series

Our premier EC Motor for Refrigeration

TYPICAL APPLICATIONS

- Bottle coolers
- Vending machines
- Heat pump water heaters
- Reach-in display cases
- Other refrigeration equipment

KEY FEATURES

- High efficiency—up to 70%
- High power factor—up to 0.95
- RoHs & REACH compliant
- SKU reduction—reduces inventory & boosts economies of scale
- Highly reliable—design life L10 of 90,000 hours

MOTOR SERIES SPECIFICATIONS

Speed Options	3-speed, reversible or timed reverse options
EMC Protection	4000 V (per EN61000-6-2)
Noise	SWL 37 dBA @ 1300 RPM (per ISO1680)
Insulation	Class A (105°C)
Motor Protection	Electronic protection, locked rotor, automatic thermal derating
Refrigerant Compatibility	HFC, CO2 and hydrocarbon (per IEC60335-2-89 Annex BB)
ATEX (EX)	IEC 60079-15 Group 2, Category 3G
IP rating	IP67 (wash-down duty)
Operating Range	-30°C to +50°C (-22°F to +122°F)
Storage Temp. Range	-40°C to +80°C (-40°F to +176°F)
Approvals	CE VDE Ex RoHS cULus

ECR2 13W MOTOR SPECIFICATIONS

Dual Voltage	115/230 VAC, 100-240 VAC, 50/60 Hz (all models)
Output Power	13 W max.
Speed Range	300 to 2400 RPM
Max. Efficiency	70%
Weight	0.54 kg (1.2lb)
Max. Input Current	0.10 A (@ 230 VAC) 0.20 A (@ 115 VAC)
Power Factor	Up to 0.95 depending on load and voltage

ECR2+ 26W MOTOR SPECIFICATIONS

Dual Voltage	115/230 VAC, 100-240 VAC, 50/60 Hz (all models)
Output Power	26 W max.
Speed Range	300 to 2300 RPM
Max. Efficiency	74%
Weight	0.69 kg (1.5lb)
Max. Input Current	0.35A (@115 VAC)
Power Factor	Up to 0.96 depending on load and voltage

ECR2 13W SUITABLE FANS

Speed	150MM (6”) 172MM (7”)	200mm (8”)				230mm (9”)			254mm (10”)	
	All Pitches	22°	28°	34°	40°	22°	28°	19°	22°	28°
1300 rpm	+	+	+	+	+–	+	+	+	+	+–
1550 rpm	+	+	+	+	+–	+	+–	+–	+–	–
1800 rpm	+	+	+	+–	–	+–	–	–	–	–

ECR2+ 26W SUITABLE FANS

Speed	200mm (8”)	230mm (9”)			254mm (10”)		
	34°	22°	28°	34°	22°	28°	34°
1300 rpm	+	+	+	+	+	+	+–
1550 rpm	+	+	+	+	+	+	–
1800 rpm	+	+	+	–	+	+–	–
2100 rpm	+	+	+–	–	+–	–	–

+ Achieve rated rpm – Does not achieve rated rpm +– May not achieve rated rpm at all back pressures

SCS
Refrigeration Controller

KEY BENEFITS

- Advanced refrigeration controls
- Energy saving
- Smart connectivity
- Commercial performance
- Asset management
- Technical diagnostics
- Digital engagement

CONTROLLER SPECIFICATIONS

Input Voltage Range	90-240 VAC 50/60 Hz
IP Rating	Front panel IP68 (back IPx5)
Max. Power Consumption	3.5W
Relay ratings	1x UL: 7.2FLA & 34.8LRA, IEC: 8A 1x UL: 3A, IEC: 3A 2 x 0.4A (triac solid state)
Low Voltage Output Ratings	1 x 5Vdc 100mA 4 x 0-24Vdc, 1A per channel*
EMC Protection	4000V (per EN61000-6-2)
Refrigerant Compatibility	HFC, CO_2, Hydrocarbon (per IEC 60335-2-89)
Operating Temperature Range	IEC -20°C to +55°C (-4°F to +131°F) UL -20°C to +50°C (-4°F to +122°F)
Storage Temperature Range	-40°C to +80°C (-40°F to +176°F)
Weight	130g (4.6oz)
Storage Temp. Range	-40°C to +80°C (-40°F to +176°F)
Weight	0.86 kg (1.9 lb)

ECF2
Our EC Fan Assembly for Refrigeration

TYPICAL APPLICATIONS

- Bottle coolers
- Vending machines
- Heat pump water heaters
- Reach-in display cases
- Other refrigeration equipment

KEY FEATURES

- High efficiency—up to 70%
- High power factor—up to 0.95
- RoHs & REACH compliant
- SKU reduction—reduces inventory & boosts economies of scale
- Highly reliable—design life L10 of 90,000 hours

MOTOR SPECIFICATIONS

Dual Voltage	115/230 VAC, 100-240 VAC, 50/60 Hz (all models)
Output Power	0–13 W max.
CFM Range	0–355 CFM (3 speed programmable)
Speed Range	300–1800 RPM field programmable in 50 RPM increments
Speed Options	3-speed, reversible or timed reverse options
Max. Input Power	20.5 W
Max. Input Current	0.10 A (@ 230 V) 0.20 A (@ 115 V)
Power Factor	Up to 0.95 depending on load and voltage
EMC Protection	4000 V (per EN61000-6-2)
Insulation	Class A (105°C)
Motor Protection	Electronic protection, locked rotor, automatic thermal derating
Refrigerant Compatibility	HFC, CO2 and hydrocarbon (per IEC60335-2-89 Annex BB)
ATEX (EX)	IEC 60079-15 Group 2, Category 3G
IP rating	IP67 (wash-down duty)
Operating Range	-30°C to +50°C (-22°F to +122°F)
Storage Temp. Range	-40°C to +80°C (-40°F to +176°F)
Weight	0.86 kg (1.9 lb)
Approvals	CE, DVE, Ex, RoHS, cULus

AC MOTOR SOLUTIONS

East West's motors production facilities in China, just outside of Shanghai, and Thailand, near the Laem Chabang Port, were designed to produce quality and efficient motors. Our highly automated facility in China houses a UL-approved witness testing facility, dynamometer, and application test operations that enables reverse engineering of existing motors or custom design of new motors.

Best-in-Class AC Motors

East West manufacturers over two million motors each year, and there are more than 10 million motors in the field. Our motors business unit specializes in designing custom motors geared specifically to any customer application.

LET'S START A CONVERSATION

Today, East West manufacturers millions of motors each year. We offer motor solutions from our catalog of products, or we'll partner with you to develop semi- to fully customized designs that meet both cost and performance requirements. No matter how unique the project, East West can help you solve it.

MOTOR DESIGN & MANUFACTURING

Available AC motors offered by East West include Permanent Split Capacitors (PSCs), 3.3 mm, 95 mm, 42 Frame, 48 Frame, and 56 Frame in fractional horsepower sizes up to 1 HP. Additionally, we provide testing expertise you can count on. Our engineering teams have years of experience with UL allowing us to manufacture products that meet UL standards the first time. Our testing capabilities include::

- Thermal shock
- Stop/start cycling
- Continuous run
- Locked rotor
- Acoustic
- Vibration
- Airflow testing
- HALT
- Extreme temperature

Customized Motor Offerings—

East West offers our customers a wide range of motors. In addition to the motors listed in this brochure, we can also provide custom developments to meet your unique needs.

TYPICAL APPLICATIONS

- Condenser fan
- Direct drive furnace blower
- Evaporative coolers
- Fan coil
- Filtration/room air cleaners
- Heat exchangers
- Heat pump water heaters
- Hot air convection fans
- Induced draft blowers
- Laboratory equipment
- Pump motors
- PTAC (packaged terminal air conditioner)
- Refrigeration
- Ventilation

Contact our East West OEM Motor Sales Team to learn more about what we can provide for you!

Additional AC Motor Offerings—

3.3”-FRAME AC MOTOR

Frame Size	3.3"
HP Range	40 W to 1/12 HP
Voltage Range	115–230
Rpm Range	1325–3450
No. of Speeds	1 or 3
No. of Shafts	1

42-FRAME AC MOTOR

Frame Size	42
HP Range	1/30 to 1/2
Voltage Range	115–230
Rpm Range	1075–3450
No. of Speeds	1 or 3
No. of Shafts	1 or 2

48-FRAME AC MOTOR

Frame Size	48
HP Range	1/6 to 3/4
Voltage Range	115–230
Rpm Range	825–3450
No. of Speeds	1, 2 or 3
No. of Shafts	1 or 2

56-FRAME SPLIT PHASE MOTOR

Frame Size	56
HP Range	1/3 to 1
Voltage Range	115–230
Rpm Range	1140–1725
No. of Speeds	1 or 2
No. of Shafts	1

FAN, BLOWER & PUMP SOLUTIONS

Customized Solutions

An East West partnership allows for Original Equipment Manufacturer (OEM) customized solutions that fit your specific air and water moving application.

Fan, Blower & Pump Customized Solutions

East West manufacturers over two million motors each year, and there are more than 10 million motors in the field. Our motors business unit specializes in designing custom motors geared specifically to any customer application. Check out our Motors Brochure to learn more about our Fan, Blower and Pump solutions.

ACROSS MULTIPLE APPLICATIONS

Today, East West manufacturers pumps for a variety of applications that include food service equipment, customer OEM pump assemblies, centrifugal pumps, and submersible pumps. We also have the ability to design custom blowers around existing systems. Typical assembly applications we manufacture include water heaters, OEM custom blowers, air purification, HVAC, and sports and fitness.

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East West

ABOUT EAST WEST Since 2001, East West Manufacturing has been a trusted, concept-to-scale Electronics Manufacturing Services (EMS) partner for some of the world's most recognizable brands and new disruptive players. As a proactive, full-solution partner, East West provides complete end-to-end services solving the most complex design, manufacturing and supply chain challenges. With more than 2,500 employees at 9 facilities in 7 countries, East West's global team serves a broad spectrum of dedicated end markets knowing that the quality products made today can truly make a difference for all us.

Contact our OEM Motor Sales Team to learn more!

OEMmotorsales@ewmfg.com

www.ewmfg.com