

PRODUCT OVERVIEW

Brochure



About Us

EC Fans & Drives, an epec engineered technologies company, specialises in the design and manufacture of energy efficient fans and motors for commercial refrigeration applications.

Our technically advanced range of high-efficiency motors and fans offers a solution to companies seeking reliable products as well as high-efficiency capabilities with the best power consumption.

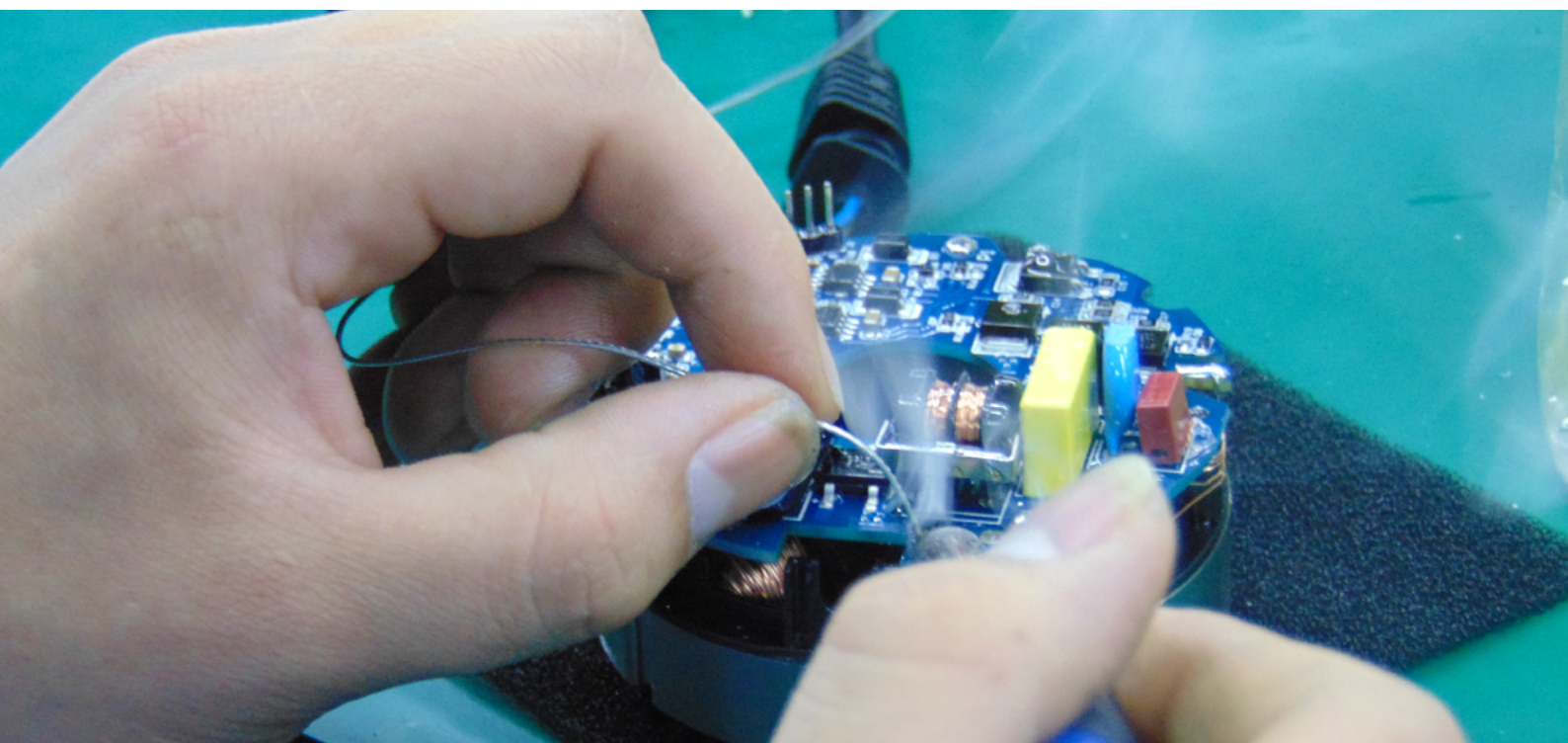
Over the past 15 years we have secured a prominent position as a reliable and respected manufacturer of electronically controlled fans and motors.

Our products are designed to meet the latest approval listings and can be found in bottle and wine coolers, chest freezers, ice machines, open case display cabinets, refrigerated vending machines and multi-deck display cases.

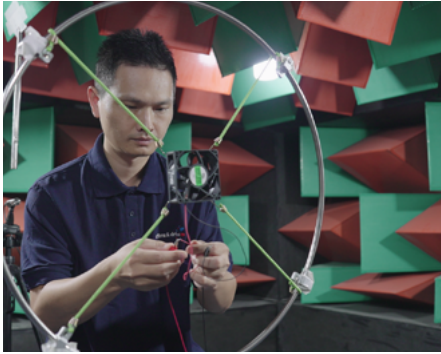
With sales offices strategically located in Asia, United Kingdom and United States of America, we are able to support our customers' global requirements and deliver an exceptional level of service to our existing and future customers.

All our products are designed at our United Kingdom engineering facility and manufactured at our facilities in Asia and Wales, United Kingdom.

All products are manufactured to stringent quality control processes on European-designed production equipment, and are inspected by epec engineered technologies quality control personnel prior to shipment. This process ensures that each and every product meets our high and uncompromising specification.



Technology



All current technical developments in electronically commutated motor and fan design are subject to constant and thorough research and evaluation by our team of engineers in the United Kingdom.

With over 40 years' experience in designing and manufacturing electric motors on a global scale, you can be assured that, in this modern and ever-evolving world of technology and innovation, our engineers are always fully informed on contemporary advances.

It's with our shared vision for future efficiency that our engineers take, try and test the leading technology to bring you the most innovative products on the market.

Our range of products meet or exceed the current operating efficiencies offered by other competing products. To support us in this, we have assisted refrigeration manufacturers who meet these demanding high levels of efficiency.

Using latest available test equipment, EC fans & drives constantly test our products to ensure they meet desired standards

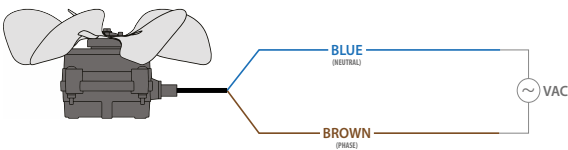
All EC Fans & Drives products are tested by 3rd party accredited test houses to comply with latest regulatory safety standards and use in propane applications

All North America approvals are tested by UL and all European approvals including ATEX accreditation and EN60335-2-89 are tested by TUV

If energy efficiency is a key objective for your application, EC Fans & Drives can supply the best available solution at the most competitive price.



ECY Series Motor - Wiring

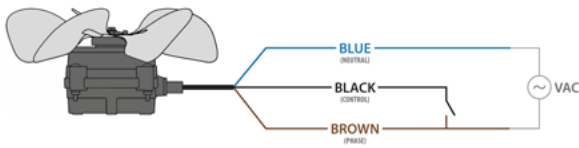


Single Speed

ECY (Single Speed) Motor should be wired so that motor powers ‘on’ when compressor starts its cycle and powers ‘off’ when compressor stops its cycle.

For safety reasons, the motor should be wired so that it powers ‘off’; when the door to the cabinet is opened.

Connection	Colour	Assignment / Function
Phase	Brown	VAC ~ Connect to Phase (L)
Neutral	Blue	VAC ~ Connect to Neutral (N)

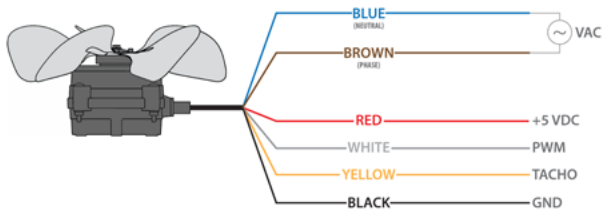


Multi Speed

ECY (Multi Speed) Motor should be wired so that motor powers ‘on’ when compressor starts and switches to second speed (trickle) when compressor stops its cycle.

For safety reasons, the motor should be wired so that it powers ‘off’; when the door to the cabinet is opened.

Connection	Colour	Assignment / Function
Phase	Brown	VAC ~ Connect to Phase (L)
Neutral	Blue	VAC ~ Connect to Neutral (N)
Speed	Black	Speed Control ~ Second Speed or Reverse Function
		Speed 1 ~ Black Wire Disconnected (Disabled & isolated)
		Speed 2 ~ Black Wire Connected to Brown (Enabled)



Speed Control

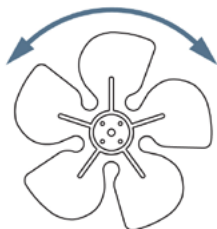
ECY (Speed Control) Motor should be wired so that motor powers ‘on’ when compressor starts and switches to variable speed (trickle) when compressor stops its cycle.

For safety reasons, the motor should be wired so that it powers ‘off’; when the door to the cabinet is opened.

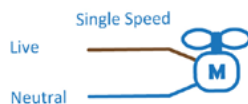
Connection	Colour	Assignment / Function
Phase	Brown	VAC ~ Connect to Phase (L)
Neutral	Blue	VAC ~ Connect to Neutral (N)
Control	Red	Voltage Output (5VDC/0.50mA) Electrically Isolated
	White	PWM, Electrically Isolated
	Yellow	Tacho Output, Open Collector, 2 Pulse Per Revolution, Electrically Isolated
	Black	Ground, Connection for Control Interface

Speed Functions

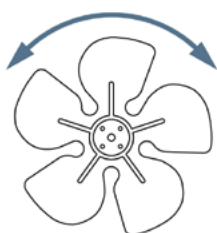
Single Speed



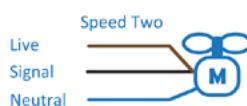
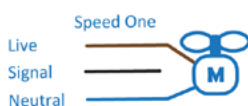
Single Speed is the entry level and direct replacement to shaded pole motor. By connecting the Live & Neutral wires to VAC input, the motor will energise and run at pre-set speed and direction.



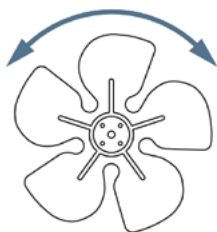
Multi Speed



Multiple Speeds are available by using the signal wire (Black). This allows for “boost” operation when cooling is required quickly and “trickle” operation once pre-set temperature has been reached.



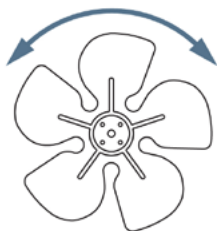
Reverse on Start



On start-up, the motor will rotate in reverse direction at pre-set speed and time, thereafter, the motor will then rotate in the correct direction at pre-set speed until VAC input is disconnected. This function helps to remove any dust build-up in the condenser fins ensuring maximum cooling efficiency and prolonged life.



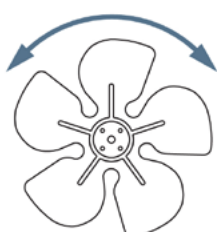
Reverse on Demand



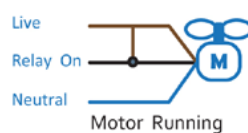
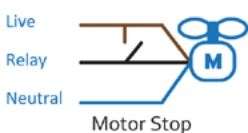
By using the signal wire connected to a relay, it is possible to define the time and duration of the reverse function as required. This function can be used during evaporator defrost cycle to ensure there is no excessive build-up of ice in the refrigeration system, or remove any dust from condenser fins, ensuring maximum cooling efficiency and prolonged life.



Relay Function



By using the signal wire as a switch, this allows constant VAC supply to the motor. Wiring below illustrates when black is disconnected the motor will go in reverse direction for a pre-set time and then stop. If signal wire is then connected to Live, the motor will rotate in the correct direction until signal wire is disconnected and then the motor will go in reverse direction for a pre-set time and then stop.



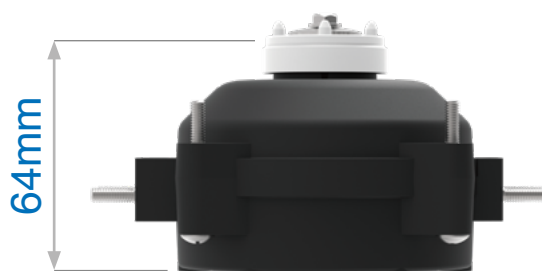
ECY Series Overview

The ECY Series motor platform is an electronically commutated (EC) motor designed for condenser and evaporator applications in commercial refrigerated cases and bottle coolers. It has been designed to allow direct replacement with existing shaded pole motors, therefore allowing drop-in replacement into existing inefficient refrigeration systems. Our team of engineers works with our customers to deliver fan/motor concepts with efficiency levels up to 70%, therefore consuming only one-third of the power of a comparable shaded-pole or unit-bearing motor.

It has been designed to meet the demanding requirements of refrigerated bottle coolers, freezers, and commercial food cabinets that have long operating times, and it's the motor of choice by numerous leading brand refrigeration manufacturers.

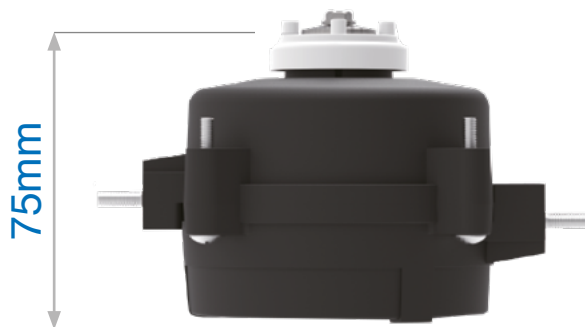
ECY-15

Input Voltage	120/230VAC
Frequency	50/60Hz
Input Power	15 Watt
Output Power	8 Watt
Efficiency	50%
Speed Range	500-2400RPM
Number of Speeds	1



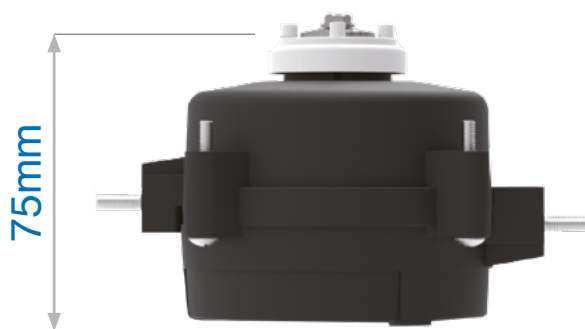
ECY-20

Input Voltage	120/230VAC
Frequency	50/60Hz
Input Power	20 Watt
Output Power	12 Watt
Efficiency	60%
Speed Range	500-2400RPM
Number of Speeds	2



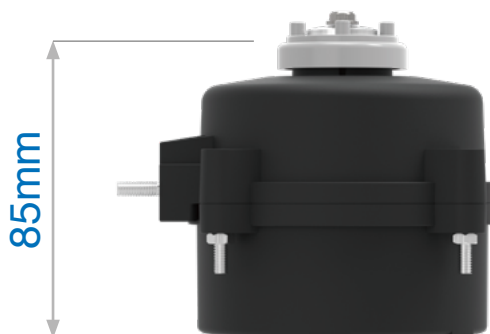
ECY-30

Input Voltage	120/230VAC
Frequency	50/60Hz
Input Power	30 Watt
Output Power	20 Watt
Efficiency	65%
Speed Range	500-2400RPM
Number of Speeds	1, 2 or 3



ECY-45

Input Voltage	120/230VAC
Frequency	50/60Hz
Input Power	45 Watt
Output Power	31 Watt
Efficiency	70%
Speed Range	500-2400RPM
Number of Speeds	3



ECY-15 Series Motor



Technical Data

Input Voltage Range	110-230VAC 50/60Hz (85VAC-265VAC)
Maximum Input Power	15 Watt
Maximum Output Power	8 Watt
Efficiency	50%
Speed Range	500 rpm - 2400 rpm (constant speed)
Insulation Class	Class B (130°C)
Motor Protection	Electronically Protected
Safety Protection	Locked rotor and auto-restart, soft start function and current limit
Earthing Protection	Double Insulated IP65 (ISO/EN 60529:2013)
Ingress Protection Rating	IP65 (per ISO/EN 60529:2013)
Housing Material	UL recognized (94Vo) rated reinforced plastic
Bearing System	High precision sealed ball bearing
L10 Life Expectancy	30,000 hours at 40°C ambient (Motor installed horizontally)
Operating Temperature	-40°C to +50°C

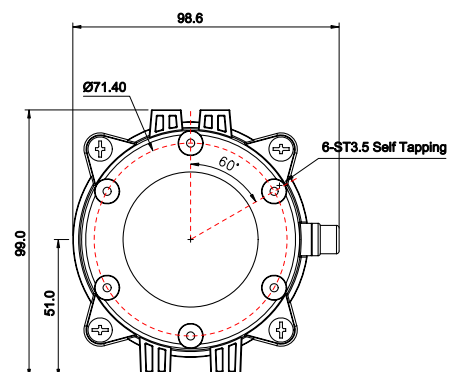
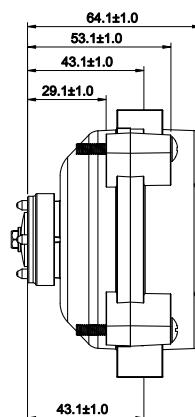
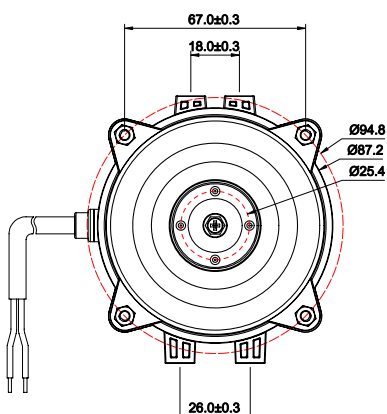
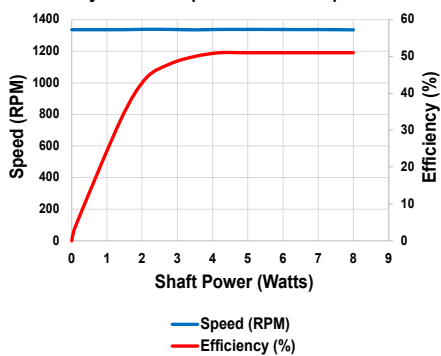
Suitable Impellers & Frame (Plastic)

Ø mm	1300rpm	1550rpm	1800rpm	2100rpm
154	✓	✓	✓	✓
172	✓	✓	✓	✓
200	✓	✓	✗	✗

Suitable Impellers & Frame (Aluminium)

Ø mm	Blade Angle	1300rpm	1550rpm	1800rpm	2100rpm
154	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
172	22°	✓	✓	✓	✗
	28°	✓	✓	✓	✗
	34°	✓	✓	✓	✗
200	22°	✓	✓	✗	✗
	28°	✓	✓	✗	✗
	34°	✓	✗	✗	✗

Dynometer Report ECY15 1330rpm



ECY-20 Series Motor



Technical Data

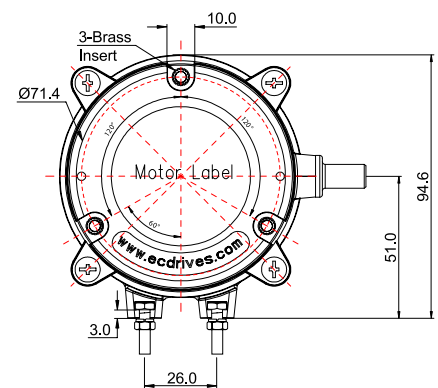
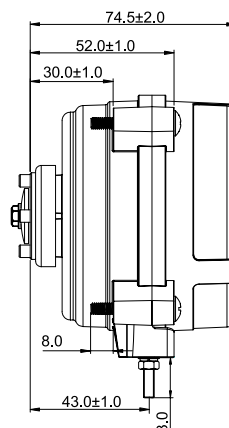
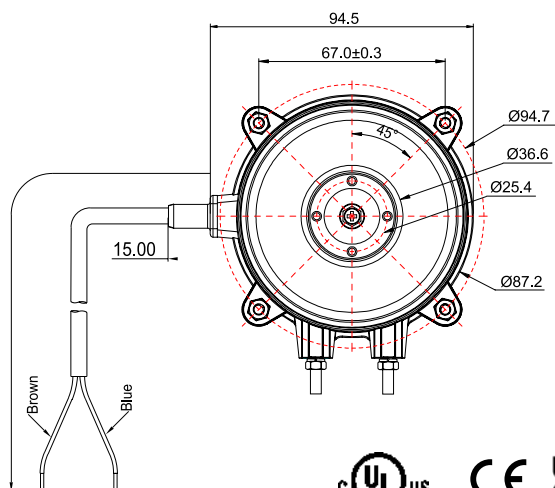
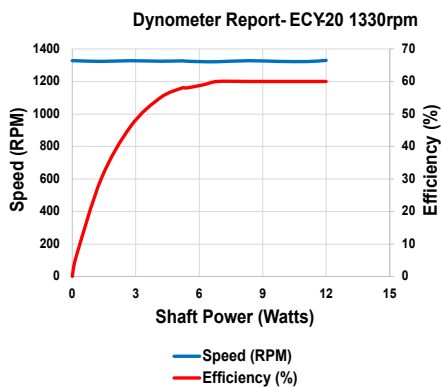
Input Voltage Range	110V or 230V single voltage and 110~240V global voltage
Maximum Input Power	20 Watt
Maximum Output Power	12 Watt
Efficiency	60%
Speed Range	500 rpm - 2400 rpm (constant speed)
Insulation Class	Class B (130°C)
Motor Protection	Electronically Protected
Safety Protection	Locked rotor and auto-restart, soft start function and current limit
Earthing Protection	Double Insulated IP65 (ISO/EN 60529:2013)
Ingress Protection Rating	IP65 (per ISO/EN 60529:2013)
Housing Material	UL recognized (94Vo) rated reinforced plastic
Bearing System	High precision sealed ball bearing
L10 Life Expectancy	40,000 hours at 40°C ambient (Motor installed horizontally)
Operating Temperature	-40°C to +50°C

Suitable Impellers & Frame (Plastic)

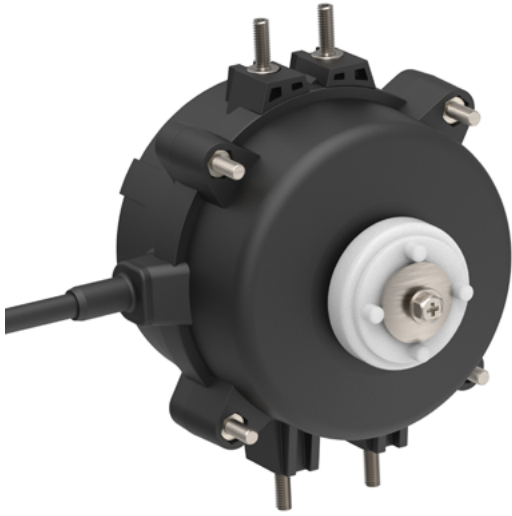
Ø mm	1300rpm	1550rpm	1800rpm	2100rpm	2400rpm
154	✓	✓	✓	✓	✓
172	✓	✓	✓	✓	✗
200	✓	✓	✓	✗	✗

Suitable Impellers & Frame (Aluminium)

Ø mm	Blade Angle	1300rpm	1550rpm	1800rpm	2100rpm
154	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
172	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
200	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✗
	34°	✓	✓	✓	✗
230	22°	✓	✓	✓	✗
	28°	✓	✓	✓	✗
	34°	✓	✓	✗	✗
254	22°	✓	✓	✗	✗
	28°	✓	✗	✗	✗
	34°	✗	✗	✗	✗



ECY-30 Series Motor



Technical Data

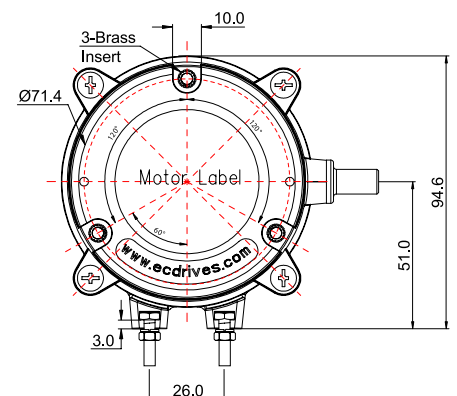
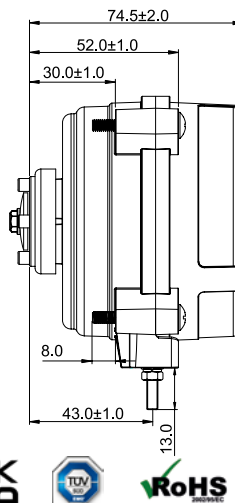
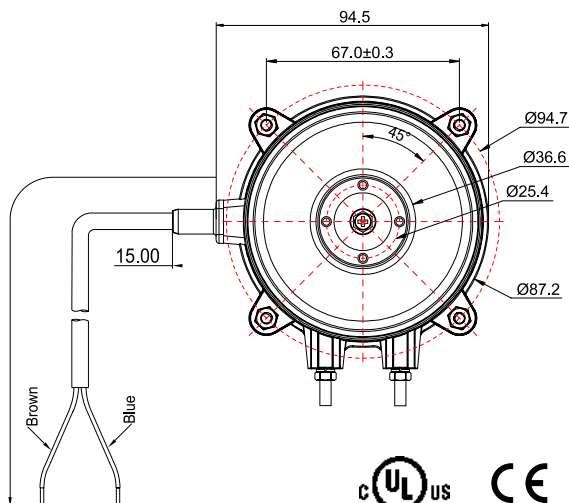
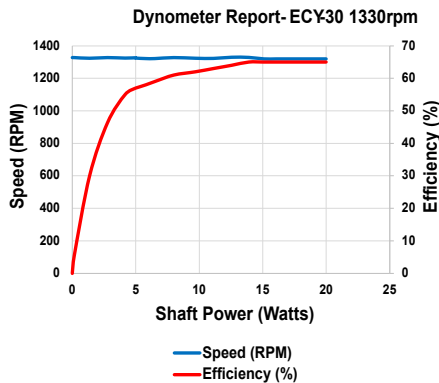
Input Voltage Range	110V or 230V single voltage and 110~240V global voltage
Maximum Input Power	30 Watt
Maximum Output Power	20 Watt
Efficiency	65%
Speed Range	500 rpm - 2400 rpm (constant speed)
Insulation Class	Class B (130°C)
Motor Protection	Electronically Protected
Safety Protection	Locked rotor and auto-restart, soft start function and current limit
Earthing Protection	Double Insulated IP65 (ISO/EN 60529:2013)
Ingress Protection Rating	IP65 (per ISO/EN 60529:2013)
Housing Material	UL recognized (94Vo) rated reinforced plastic
Bearing System	High precision sealed ball bearing
L10 Life Expectancy	40,000 hours at 40°C ambient (Motor installed horizontally)
Operating Temperature	-40°C to +50°C

Suitable Impellers & Frame (Plastic)

Ø mm	1300rpm	1550rpm	1800rpm	2100rpm	2400rpm
172	✓	✓	✓	✓	✓
200	✓	✓	✓	✓	✗
230	✓	✓	✓	✗	✗

Suitable Impellers & Frame (Aluminium)

Ø mm	Blade Angle	1300rpm	1550rpm	1800rpm	2100rpm
154	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
172	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
200	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✗
	34°	✓	✓	✓	✗
230	22°	✓	✓	✓	✗
	28°	✓	✓	✓	✗
	34°	✓	✓	✗	✗
254	22°	✓	✓	✗	✗
	28°	✓	✓	✗	✗
	34°	✓	✗	✗	✗



ECY-45 Series Motor



Technical Data

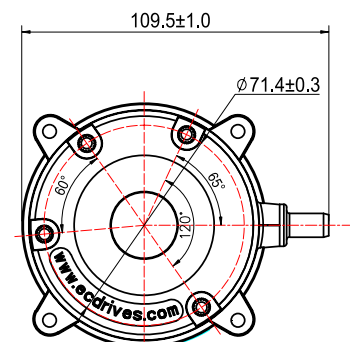
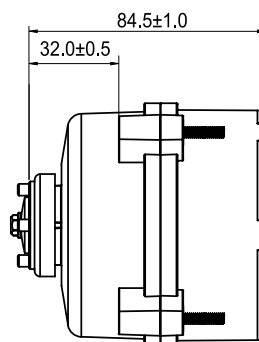
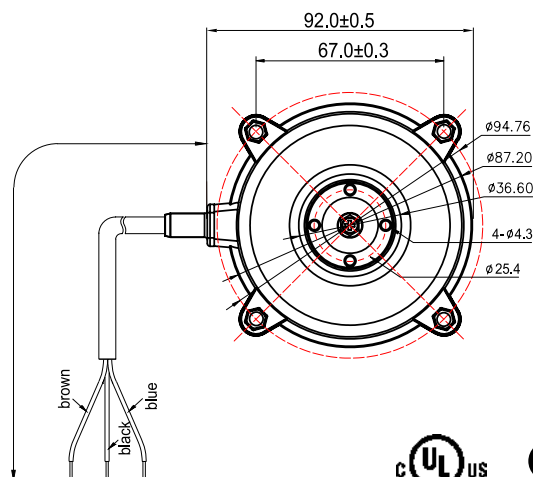
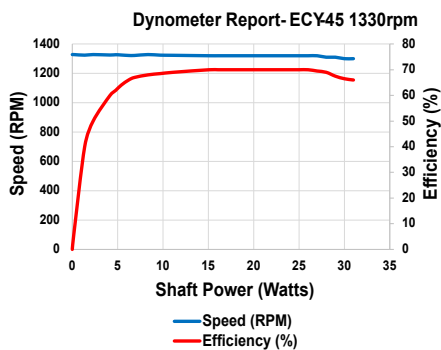
Input Voltage Range	110V or 230V single voltage and 110~240V global voltage
Maximum Input Power	45 Watt
Maximum Output Power	31 Watt
Efficiency	70%
Speed Range	500 rpm - 2400 rpm (constant speed)
Insulation Class	Class B (130°C)
Motor Protection	Electronically Protected
Safety Protection	Locked rotor and auto-restart, soft start function and current limit
Earthing Protection	Double Insulated IP65 (ISO/EN 60529:2013)
Ingress Protection Rating	IP65 (per ISO/EN 60529:2013)
Housing Material	UL recognized (94Vo) rated reinforced plastic
Bearing System	High precision sealed ball bearing
L10 Life Expectancy	40,000 hours at 40°C ambient (Motor installed horizontally)
Operating Temperature	-40°C to +50°C

Suitable Impellers & Frame (Plastic)

Ø mm	1300rpm	1550rpm	1800rpm	2100rpm	2400rpm
200	✓	✓	✓	✓	✓
230	✓	✓	✓	✗	✗
254	✓	✓	✓	✗	✗

Suitable Impellers & Frame (Aluminium)

Ø mm	Blade Angle	1300rpm	1550rpm	1800rpm	2100rpm
172	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
200	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✓
	34°	✓	✓	✓	✓
230	22°	✓	✓	✓	✓
	28°	✓	✓	✓	✗
	34°	✓	✓	✓	✗
254	22°	✓	✓	✓	✗
	28°	✓	✓	✓	✗
	34°	✓	✓	✗	✗
300	22°	✓	✓	✗	✗
	28°	✓	✓	✗	✗
	34°	✓	✗	✗	✗



ECP Pump Motor

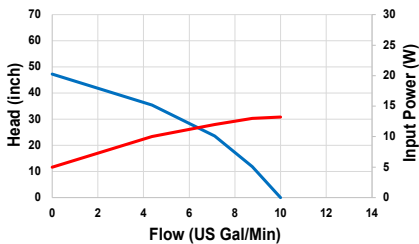
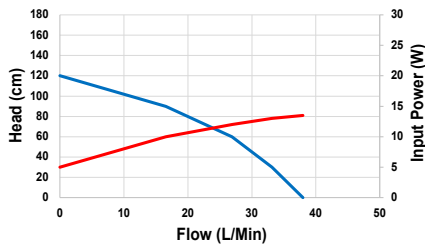


Technical Data	
Input Voltage Range	110V or 230V single voltage and 110~240V global voltage
Maximum Input Power	30 Watt
Maximum Output Power	20 Watt
Efficiency	68%
Insulation Class	Class B (130°C)
Motor Protection	Electronically Protected
Safety Protection	Locked rotor and auto-restart, current limit
Ingress Protection Rating	IP65 (per ISO/EN 60529:2013)
Operating Temperature	-40°C to +50°C
Shaft Material	Stainless Steel 303
Fixing Plate Material	Stainless Steel 430
Motor Housing Material	PBT (Food Grade Compliant)
Column Pump Material	ABS (Food Grade Compliant)
Impellor Material	POM (Food Grade Compliant)

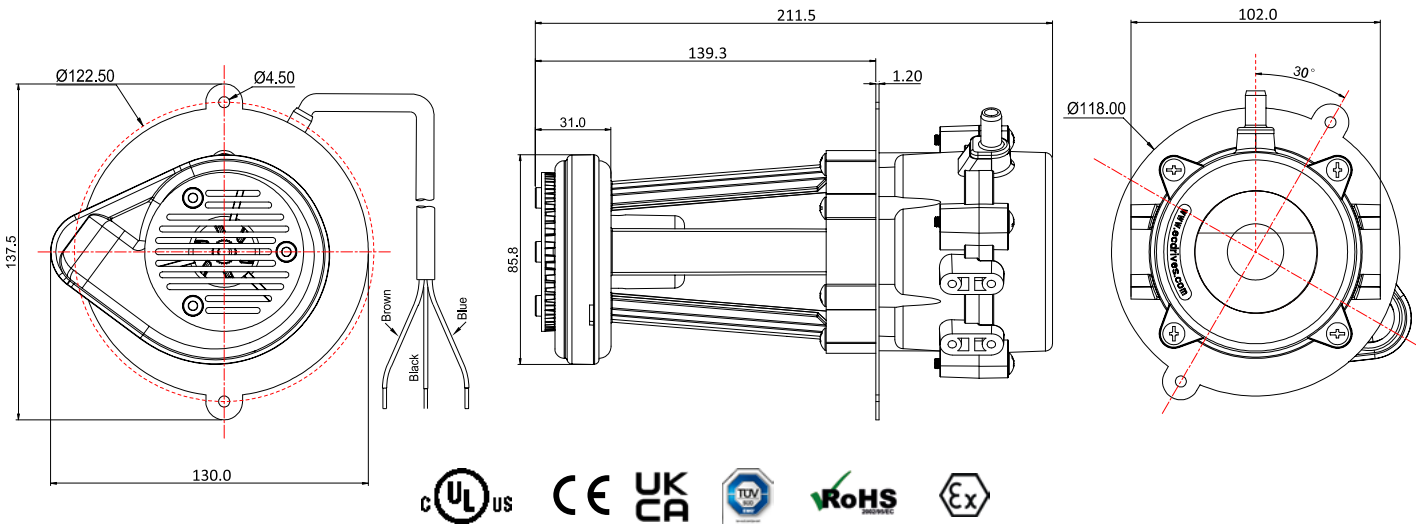
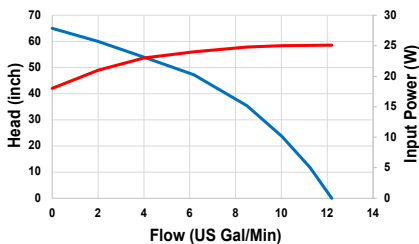
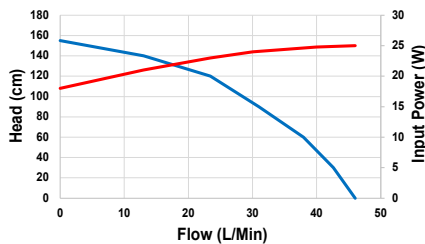
Metric

Imperial

1300 RPM



1600 RPM



EFP Series Fan Pack



The EFP series fan pack is a fully integrated assembly that has been aerodynamically designed to deliver high-efficiency flow rates at static operating point 50 pascal (0.20 in-H₂O) and below.

At the heart of this fan pack is the ECY series motor which allows customers to define single-speed, 2-speed (high and trickle), or bi-directional, whereby the reverse function can be time-defined or on-demand. The EFP series fans can also be supplied with speed control via 0-10VDC control analogue or PWM.

In the refrigeration industry, condenser and evaporator fans are traditionally powered by AC shaded-pole fractional horsepower motors, which will turn 70% or more of the electricity they consume in to winding temperature rise. This wasted energy contributes directly to the heat load in the system that will make the refrigeration equipment work harder and reduce its life expectancy. By using EFP fan packs with brushless EC motors, wasted energy in the form of heat is reduced between 50-70% compared to the old shaded-pole motors, therefore, delivering increased energy efficiency and longer life expectancy.

Outline Specification

- Available in 154mm, 172mm, 200mm, and 230mm diameters with speed range between 300rpm to 2400rpm
- Up to 32 Watt output power output with one SKU
- Constant speed (regardless of power supply fluctuation) with output power range from 3 watts to 32 watts
- Available in LVDC, 120VAC 50/60 Hz, 230VAC 50/60Hz or 120-230VAC 50/60Hz
- Airflow curves from our AMCA-approved airflow chambers can be supplied upon request

EFP Series Fans for Bottle Coolers and Open Display Cabinets

Our EFP Series fans have been designed to meet the demanding requirements of refrigerated bottle coolers and open display cases in the commercial food sector, which have long operating times.

For refrigeration and freezing applications, EC Fans & Drives provides modern fan concepts based on an efficient fan design integrated with a high-efficiency electronically commuted motor (EC motor) that delivers efficiency levels up to 70%, therefore, consuming only one third of the power of a comparable shaded-pole or unit bearing motor.

These fans have been designed for installation under shelves and in the rear panel of refrigerated display cases. Thanks to their extremely low-profile design, the fans fit in confined spaces, and they are well-equipped to deal with the higher back pressure encountered in such situations.

Hydro-Carbon Friendly

As propane is becoming increasingly popular as an ecological alternative to traditional refrigerant, we have to be aware that when a propane refrigerant system malfunctions, it is possible that the non-toxic hydrocarbons can form readily explosive mixtures with air.

These fans have been tested by third-party approval agencies and satisfy the requirements of the European standard EN 60335-2-89 (household appliance standard -particular requirements for commercial refrigerating appliances) and ATEX approval to EN IEC 60079, which gives the customer confidence that our products can safely be used in flammable refrigerant systems.

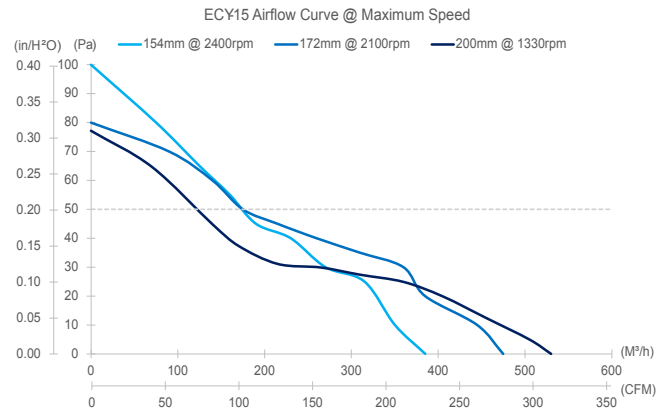


EFP Fan Pack -Technical Data

The EFP Series fan packs are available in 4 fan diameters and can be assembled with ECY-15, ECY-20, ECY-30 & ECY-45 motors therefore allowing customers to select the most cost effective cooling solution for their application.

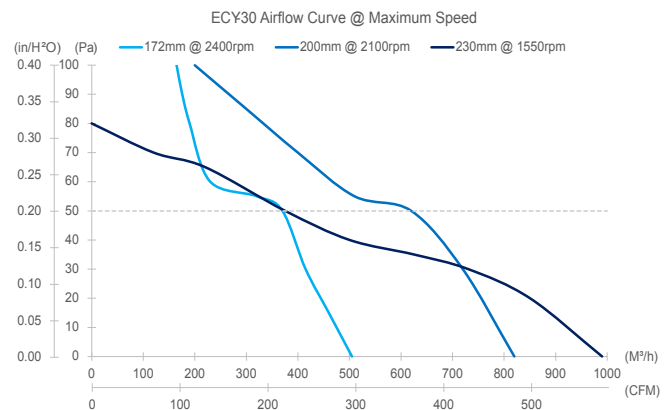
ECY-15 Motor (Maximum Input Power 15 Watts)

ECY-15	154mm (6")	172mm (7")	200mm (8")	230mm (9")
Max Speed (rpm)	2400	2100	1330	✗
Airflow @Max Speed (M3/hr)	390	480	625	✗
Airflow @Max Speed (CFM)	230	283	368	✗
Input Power @Max Air Flow	10.0	11.6	5.8	✗



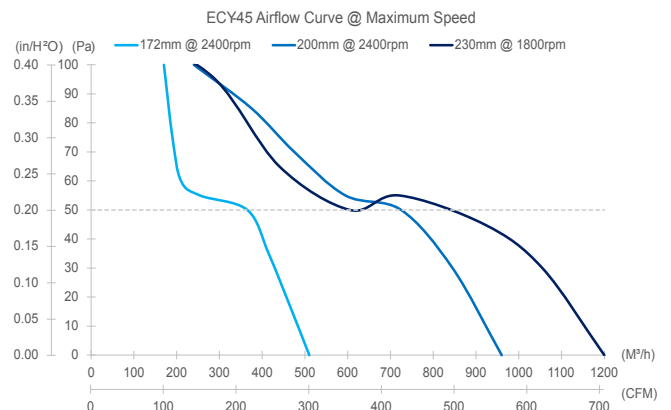
ECY-30 Motor (Maximum Input Power 30 Watts)

ECY-30	154mm (6")	172mm (7")	200mm (8")	230mm (9")
Max Speed (rpm)	✗	2400	2100	1550
Airflow @Max Speed (M3/hr)	✗	505	810	990
Airflow @Max Speed (CFM)	✗	300	480	585
Input Power @Max Air Flow	✗	18.1	25	26.8



ECY-45 Motor (Maximum Input Power 45 Watts)

ECY-45	154mm (6")	172mm (7")	200mm (8")	230mm (9")
Max Speed (rpm)	✗	2400	2400	1800
Airflow @Max Speed (M3/hr)	✗	500	960	1200
Airflow @Max Speed (CFM)	✗	295	565	705
Input Power @Max Air Flow	✗	15	35.7	38



ECY - 30/45 Speed Controller

Speed & Direction Control for ECY-30 and ECY-45 Refrigeration Motors:

Allowing the customer complete flexibility to change all 3 speeds & rotation on our ECY-30 & ECY-45 global voltage motors through the motor cable.

Key Features:

Lead-Wire Control Only

Standalone unit with no need for connection to laptops or WiFi - adjust speed and direction directly via lead wire.

Bi-directional Motor Control

Seamlessly switch motor direction with a simple signal change.

Accurate & Efficient Speed Configuration

Fine-tune motor performance with precision across the speed curve with approx 5 second cycle time, including connection via plug connector

Compact & Durable Design

Small footprint for easy integration with a robust frame, designed for a production environments

Post-Installation Flexibility

Fine-tune fan/motor speed even after installation in the the field - no need to remove or replace equipment.

Compatibility

Compatible

- ECY-30
- ECY-45

Not Compatible With:

- ECY-01
- ECY-02
- ECY-15



Require More Information?

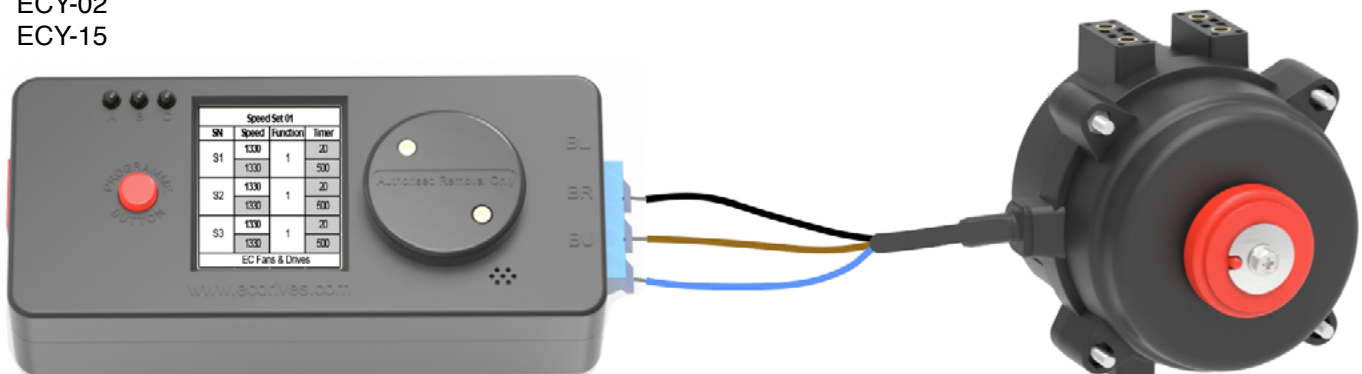
To obtain further information on the ECY 30/40 Speed Controller, please scan the QR code or visit our website at www.ecdrives.com



Note:

Attempting to use this controller with non-compatible models may result in improper function or potential damage to the motor and controller. Always verify motor model before integration.

For more information, please contact EC Fans & Drives: sales@ecdrives.com



EC Axial Fans



A complete range of electronically commutated (EC) tube axial fan units that have been designed specifically for the commercial refrigeration sector with enhanced reliability, environmental protection and robust front end protection features which result in 75% less power consumption than traditional AC axial fans.

All models are supplied as global voltage (85~265 VAC 50/60 Hz) which allows customers to purchase one SKU for the global market.

The EC axial fans have been designed as drop-in replacements to existing AC axial fans, and, due to the motor being a brushless DC construction and the aerodynamically designed fan blade we are able to achieve higher airflow characteristics that can produce up to 40% more airflow compared to existing AC axial fans.

EC fans & drives currently offer 9 frame sizes with various airflows.

Please review available frame sizes listed below.



- 60mm x 60mm x 25mm
- 80mm x 80mm x 25mm
- 80mm x 80mm x 38mm
- 92mm x 92mm x 25mm
- 92mm x 92mm x 38mm
- 120mm x 120mm x 25mm
- 120mm x 120mm x 28mm
- 135mm x 135mm x 38mm
- 172mm x 150mm x 51mm



Standard Specification

- Voltage Range (85~265 VAC 50/60 Hz)
- Constant speed configuration as standard
- Variable speed options available (0-10 Control Analogue, PWM, Tacho etc.)
- Ingress Protection IP54 as standard (IP55 and IP68 on request)
- High Precision Ball Bearings
- Operating Temperature range -30°C to +70°C

Global Approval

EC Fans & Drives axial fans have been third party tested by both UL & TUV to meet current global approval standards, therefore, giving the customer confidence that the product will meet required safety standards

ATEX & EN60335-2-89 Compliance

EC Fans & Drives offer the EC12038 axial fan with ATEX & EN60335-2-89 in IP54, IP55 and IP68 for hydrocarbon refrigerant systems

We can also offer the EC17251 Series axial fan with EN60335-2-89 in IP54, IP55 & IP68 for hydrocarbon refrigerant systems

Both the ATEX & EN60335-2-89 compliance has been obtained by a third-party approval agency TUV.



ec fans & drives

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