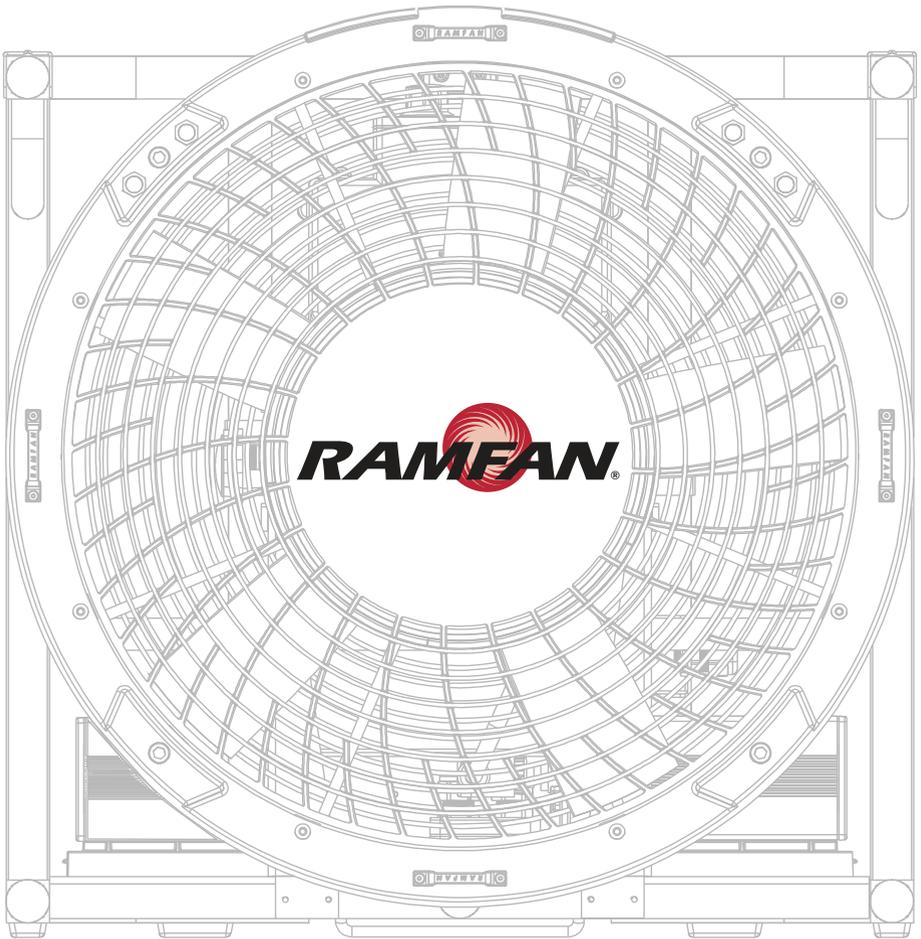


# EX50Li

## All Purpose-Battery Ventilator



## Owner's Guide





## **READ MANUAL BEFORE STARTING FOR THE FIRST TIME!**

Thank you for purchasing the RAMFAN® EX50Li battery powered multi-purpose ventilator manufactured in the USA by Euramco Safety, Inc.

For more than 30 years Euramco Safety has been on the cutting edge of industrial, fire, and marine ventilation products. Each of our blower/exhausters, smoke ejectors, PPV & LSV fans and accessories represent the finest technologies available. Every product is constructed to demanding and exact specifications for quality, performance, and reliability.

When human life depends on having a fan that can deliver clean, safe air, you have only one choice you can trust: RAMFAN.

Explore our website and online catalog at [www.euramco.com](http://www.euramco.com) and discover how RAMFAN can make a difference in the field!

All product information in the publication is based on the most current information available at the time of printing. Euramco Safety, Inc. reserves the right to make changes at anytime without notice.

### **PRIOR TO FIRST USE**

1. Operate on AC voltage, 85-264V, 50/60 Hz 1 $\Phi$ , for charging and discharging.
2. The unit is suitable for use on Ground Fault protected circuits.
3. Should the provided AC connector be unsuitable, replace with desired connector containing a grounding circuit. Check continuity from ground terminal to motor shell.
4. Place batteries into holders and connect to IP66 connectors, Fully charge prior to first use.
5. This fan is for emergency service use. Charge fully between runs. Create a charging protocol.
6. To charge, turn the speed control fully to the left (OFF) and then connect to AC outlet. Indicator lights will illuminate, and then go off. When charging commences, indicator lights will show state of charge. Charging should complete in 3-4 hours, with the indicator lights turning green.
7. For DC operation with AC disconnected, hold the wake button until indicator lights come on showing battery state. Advance speed control.
8. For AC operation, advance speed control.



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## Warning Labels & Safety Precautions

- Electrical shock hazard. Do not open enclosures.
- **DO NOT START** with signs of visible damage.
- Blower is not intended for operation in explosive atmospheres.
- Wear ear protection when close by.
- Keep body parts and loose objects away from intake of fan.
- Do not move while running.
- Operate and repair by trained personnel only.
- Always use grounded plug and properly ground AC power receptacle.
- Heat sink becomes hot during operation and charging. LED lights become hot during use. Do not touch.
- Use with approved, good condition extension cord with ground connector.



0-150 ft (0-50m)	AWG 14 (2.50 mm)
>150 ft (> 50m)	AWG 12 (4.00 mm)

## Specifications

EX50LI 18"/46 cm		
Weight	45 lbs	20 kg
Dimensions	21 x 12 x 20.6 in	534 x 304 x 523 cm
Power AC	Line (85-264V 1Φ)	650w
Operating Temp Range	-4°F to 105°F/-20°C to 40°C	
Charge Temp Range	32°F to 105°F/0°C to 40°C	



## Control Panel



- 1 Battery Wake button
- 2 LED Scene Light
- 3 Battery Indicator Lights (L&R)
- 4 Speed Control

## Unit Description

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The EX50Li is a multi-purpose 18"/46cm ventilator powered by battery(s) or 85-264v single phase AC. The flexible frame configuration allows for PPV, Smoke Ejector or ducted blower use in both normal, horizontal and hanging positions. The fan can be tilted from 0-36° within the frame in PPV mode.

The motor, motor controller and batteries are water-resistant, IP66 rated.

The motor is a variable-speed BLDC motor controlled by a microprocessor integrated with a power supply, dual battery chargers and an LED light driver.

The EX50Li will run with one or two 40v 6Ah Li-ion battery packs. Each pack yields about 23 min of operation at full power. Extended operation is achieved by reducing speed. The batteries may be swapped during operation.

AC voltage can be applied while running on batteries and the ventilator will auto-switch to AC power. Conversely, the AC power can be removed and the unit will auto-switch to battery power, if sufficient charge remains.

The integrated battery chargers will charge one or two fully discharged battery packs in 4 hours or less.

LED scene lights are integrated into the fan shroud and have a high-low-off switch. Hold to change.

The integrated controller is EMI-protected to prevent interference with radio communication.

A simple Control Panel on the top of controller controls all functions.

## Battery Operation

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1. When AC is disconnected and Speed control is off, the controller and battery(s) will enter a sleep mode to conserve the battery power after 60 minutes of no activity.
2. To wake, push and briefly hold Wake button on control panel. Indicator lights will show battery status. The unit will return to sleep mode if not used within 10 minutes.
3. If Speed control is not in off position, return to off, and then advance as desired.
4. Blower will run on one or two battery packs. Two packs are used simultaneously and discharge evenly. Runtime is doubled with two packs. Indicator lights show battery charge state as in table. Indicator lights will turn red, then flash red as end of charge approaches. Batteries will disconnect at the end of their charge and blower will stop.
5. Battery(s) may be swapped for charged batteries at any time.
6. Reduce run speed to minimum required to increase runtime.

## AC Operation

1. Connect blower to AC source.
2. Indicator lights will come on and will show battery charge.
3. Indicator lights will be solid green while running on AC, not showing battery charge.
4. When fan is stopped, indicator lights will show battery charge. The fan will begin charging after 15 min of idle time.
5. Speed control must be off or turned to off before unit will run; a safety precaution to prevent unwanted fan start.
6. Advance the Speed control as desired.
7. Batteries do not charge while fan is on.

## Charging

1. If both battery(s) and AC are connected, the battery(s) will begin charging after 15 minutes of idle time.
2. Indicator lights will show charge state during charging (See insert). Charging should complete in about 4 hours, with the Indicator lights turning green. Should the Speed control be turned on during the charge, charging will stop and the fan will start. Charging will begin again after 15 min of idle time.
3. After charging is complete, the chargers will maintain the battery(s) by keeping the blower connected to AC.
4. In service storage. Keep batteries topped by keeping blower connected to AC. Battery charge lights will go out as the controller and batteries are programmed to reduce leakage to a bare minimum. Use wake up button to check charge state.

Indicator Lights during charge:		
<p>The diagram shows four battery icons with varying levels of charge. Below each icon is a corresponding indicator light: a solid green circle for a full battery, a solid orange circle for a 20-80% charge, a red circle with radiating lines for a 20% charge, and a white circle for an empty battery.</p>	<b>Green</b>	>38v (80 - 100% charge)
	<b>Orange</b>	>33v and 38v (20 - 80% charge)
	<b>1 sec Flashing red</b>	>27v and 33v (20% charge)
	<b>½ sec (Quick) Flash Red</b>	Failure to charge in 7 hrs <=36v
	<b>LIGHTS GO OFF</b>	Low Voltage Cutout Battery <=27v
	<b>Green</b>	>38v (80 - 100% charge)
	<b>Orange</b>	>33v and 38v (20 - 80% charge)
	<b>1 sec Flashing red</b>	>27v and 33v (20% charge)
	<b>½ sec (Quick) Flash Red</b>	Failure to charge in 4 hrs <=36v
	<b>LIGHTS GO OFF</b>	Low Voltage Cutout Battery <=27v

# Battery

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1. RAMFAN R2-360-AH-U lithium-ion battery packs are rated 40v 6Ah. The cells are Samsung 18650 rated 3Ah.
2. Factors affecting Performance and Cycle life.
  - Battery packs will last significantly longer when run in pairs; there will be a lower amp draw on each cell.
  - The number of discharge/charge cycles depends on how far down batteries are discharged; called the depth of discharge (DoD). Two battery packs with an average runtime of 20 minutes (50% DoD) or less will last significantly longer than two battery packs with an average runtime of 40 minutes (100% DoD).
  - As delivered, two new battery packs can power the blower for about 46 minutes. This decreases as the cycles pileup as shown in the table. Battery(s) will need to be replaced as they age.
  - Keep the blower attached to AC while not being used. This will keep them charged and lengthen their service life. An idle battery will slowly lose charge and possibly become unusable.
  - The number of discharge/charge cycles depends on Depth of discharge. Depth of discharge is the average capacity used per discharge. For example, 2 batteries with a 40 min capacity used for 20 minutes on average will be a 50% Depth of discharge (DoD). 1 battery with 20 min capacity run 20 minutes will be 100% DoD. The pair will last longer.

Depth of Discharge in minutes-2 pack	Discharge/Charge Cycles (Life)*
46 min.	250-500
20 min.	800+
10 min.	1500+

\* Estimate only. Battery packs lose capacity as they are used. This number represents the number of cycles, after which the battery capacity has reduced to 60-70% of starting capacity, commonly time to replace. If battery capacity reaches less than what the user requires replace with new.

# Maintenance

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- DO NOT disassemble blower for maintenance reasons.
- Do not loosen screws on control box without contacting Euramco customer service. They are torqued to a setting to achieve water tightness.
- Clean fan periodically to remove accumulated dust or particles from fan guards, impeller blade and heats ink in rear of controller (ribbed). Use only biodegradable detergents. If power washing, avoid controller housing especially gaskets and control panel.
- Contact factory for replacement parts and installation instructions.
- Properly dispose of battery packs when necessary. Contact your local hazardous materials on e-waste collection department for details or proper disposal of lithium-ion batteries.

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