

EC-3000/3400 Solid State Rotary Cam Limit Switch



Installation/Operation Manual

Electro Cam Corp.

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Safety and Preventive Maintenance

Shaft Connection Precaution

The shaft can be coupled to the machine using a chain and sprocket, timing pulley and belt, or a direct in-line shaft-to-shaft coupling.

If a shaft-to-shaft coupling is used, Electro Cam Corp. recommends the use of a flexible coupling. Flexible couplings available through Electro Cam Corp. are listed on the Rotary Cam Switch Price List.

CAUTION

Unit damage may occur when using a solid coupling with shaft misalignment greater than 0.005". Shimming of the individual unit to its mounting surface must take place because of tolerance stackups.

Do the following prior to installing, setting up, or operating your Rotary Cam Limit Switch:

WARNING

Turn the power to the machine off prior to installation.

When conducting maintenance on this product, ensure that the machine is in a safe control mode.

Keep all personnel clear of the machine area while adjusting cams, rotating the shaft, or setting DIP switches. An accidental start up can damage the machine and injure personnel.

Preventive Maintenance

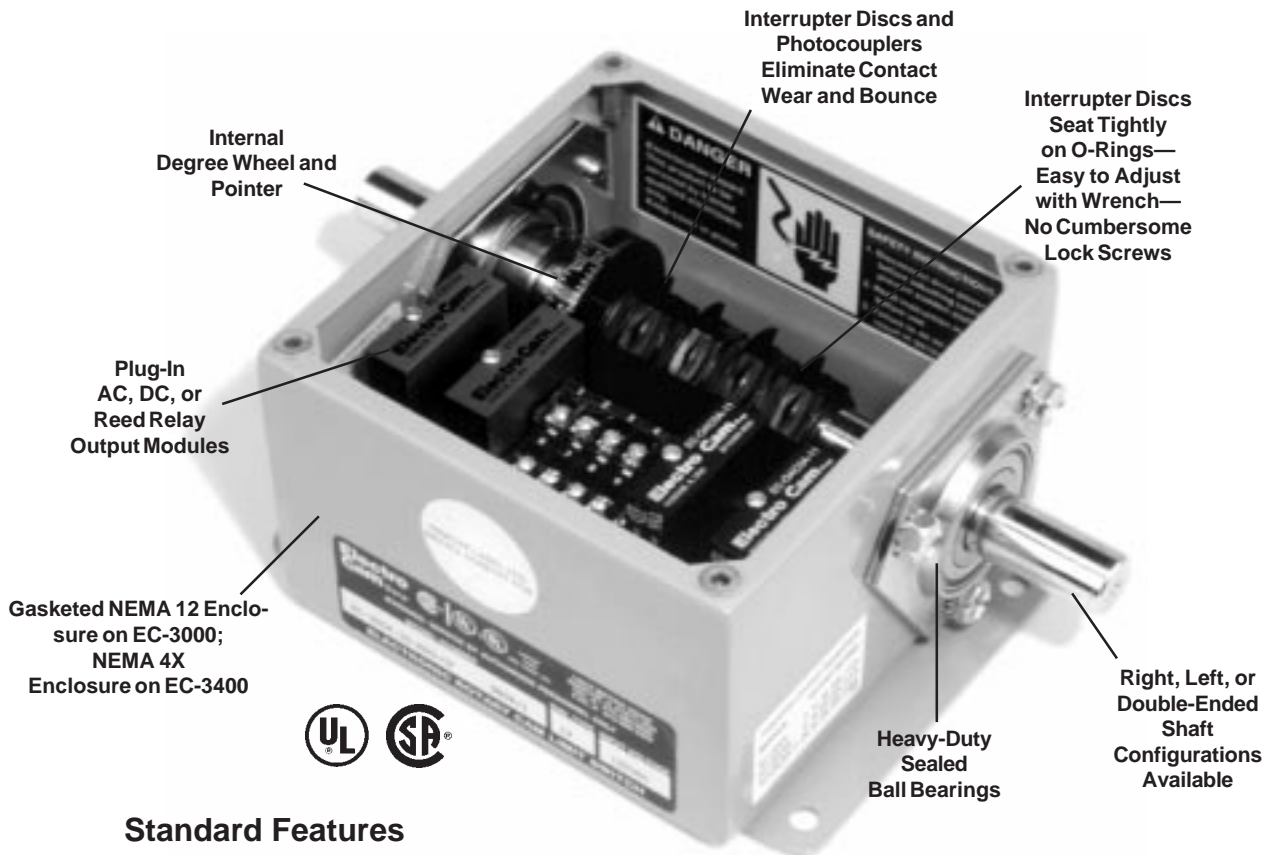
Extensive maintenance is not normally required because the limit switch is solid state and has no contacting parts. However, certain preventive maintenance items should be performed to ensure a long life.

CAUTION

1. Do not operate the unit any longer than necessary with the cover off.
2. Secure all cover screws.
3. Keep the interior of your unit clean and free of contaminants.

Product Description

EC-3004-10-ADO Unit Shown (JIC, cover not shown)



Standard Features

- Units available with 4, 8, or 12 fused optically-isolated outputs.
- Photo-interrupter discs, seated tightly on O-rings, eliminate contact bounce at high speeds and are easily adjusted with a wrench.
- Output modules are plug-in and available in AC, DC, or Reed Relay output. Each output has a plug-in fuse, easily removed and installed with a needle nose pliers.
- LED indicator lights illuminate when an output is “on”.
- EC-3000 units housed in gasketed NEMA 12 JIC enclosures; EC-3400 units housed in NEMA 4X stainless steel enclosures.
- Heavy-duty sealed ball bearings are used for shaft rotation.
- Operates at speeds from 0 to 3000 RPM in a clockwise or counter-clockwise rotation.
- Internal degree wheel and pointer is located on the shaft for easy and accurate adjustment.
- Right, left, or double-ended shaft extensions are available. All Nema 4X units feature the double-ended shaft extensions as standard equipment.
- Standard EC-3000 and EC-3400 Series are UL listed, CSA certified. 240 VAC (input power) models are not UL listed.

Product Description

The EC-3000 and EC-3400 Series Rotary Cam Limit Switches replace traditional cams and mechanical limit switches, eliminating contact wear and bounce. They are shaft-driven and use interrupter discs and photocouplers for on/off switching based on rotary position. These switches provide on/off control to devices such as glue guns, solenoids, air cylinders, or relays. They can be used as stand-alone controls or interfaced to other circuitry such as Programmable Logic Controllers (PLC).

Five standard models are available in the EC-3000 Series and four standard models in the EC-3400 Series units. The EC-3000 units are rated NEMA 12, and the EC-3400 units are NEMA 4X rating with a stainless steel enclosure. The cover plate on the EC-3400 units is secured with clamps to avoid contamination. The EC-3400 units are standard with a double-ended stainless steel shaft.

Unit Specifications

Max Speed:	3000 RPM, clockwise or counterclockwise rotation		
Max Phase Shift:	1°/1000 RPM		
Ambient Temp:	0° to 60°C (32° to 140°F)		
Humidity:	95% maximum relative non-condensing		
Input Voltage:	120 VAC (108 to 132 VAC), 50 or 60 Hz. 12 VDC, 24 VDC or 240 VAC units available		
Input Power:	EC-3004/EC-3404	3 VA Max	
	EC-3008/EC-3408	6 VA Max	
	EC-3012/EC-3412	6 VA Max	
Shaft:	3/4" diameter shaft extensions. The shaft is rated at 32,000 PSI yield and necked down to 0.500" internally. Power transmission through the shaft should be based on these figures.		
Max Side Load:	100 lbs. up to 1800 RPM / 200 lbs. up to 500 RPM		
Bearing Life:	10 years (87,660 hours) continuous running with 75 lbs. side load at 1000 RPM. Note: Consult factory if higher speeds or larger loads are required.		
Enclosures:	EC-3000—NEMA 12 JIC, oil-tight steel housing EC-3400—NEMA 4X stainless steel housing		
Printed Circuit Board:	EC-3000—conformal coating on top only EC-3400—conformal coating on top and bottom		
Net Weight:	EC-3004/EC-3404	9.00 lbs.	4.0 kg
	EC-3008/EC-3408	13.50 lbs.	6.1 kg
	EC-3012/EC-3412	15.00 lbs.	6.8 kg

Product Description

Table 1—Information for the EC-3000 and EC-3400 Series Units.

Unit	Output	Shafts	Output Fuses	Input Fuses
EC-3004 EC-3404	4	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250
EC-3008 EC-3408	8	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250
EC-3012 EC-3412	12	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250

Output Module Information

The EC-3000 Series and the EC-3400 Series units offer plug-in modules for AC, DC, and Reed Relay outputs. **One output module must be purchased for each output desired.**

AC Output (EC-OAC5A-11, black/gray)

Output Voltage: 24 to 280 VAC
Output Current: 3 Amps @ 35°C (95°F)
Derate 50 mA/°C above 35°C (95°F)
Values marked on actual unit denote derated operating parameters.

DC Output (EC-ODC5, red)

Output Voltage: 0 to 60 VDC
Output Current: 3 Amps @ 35°C (95°F)
Derate 35.7 mA/°C above 35°C (95°F)
Values marked on actual unit denote derated operating parameters.

DC Output (EC-ODC5A, red)

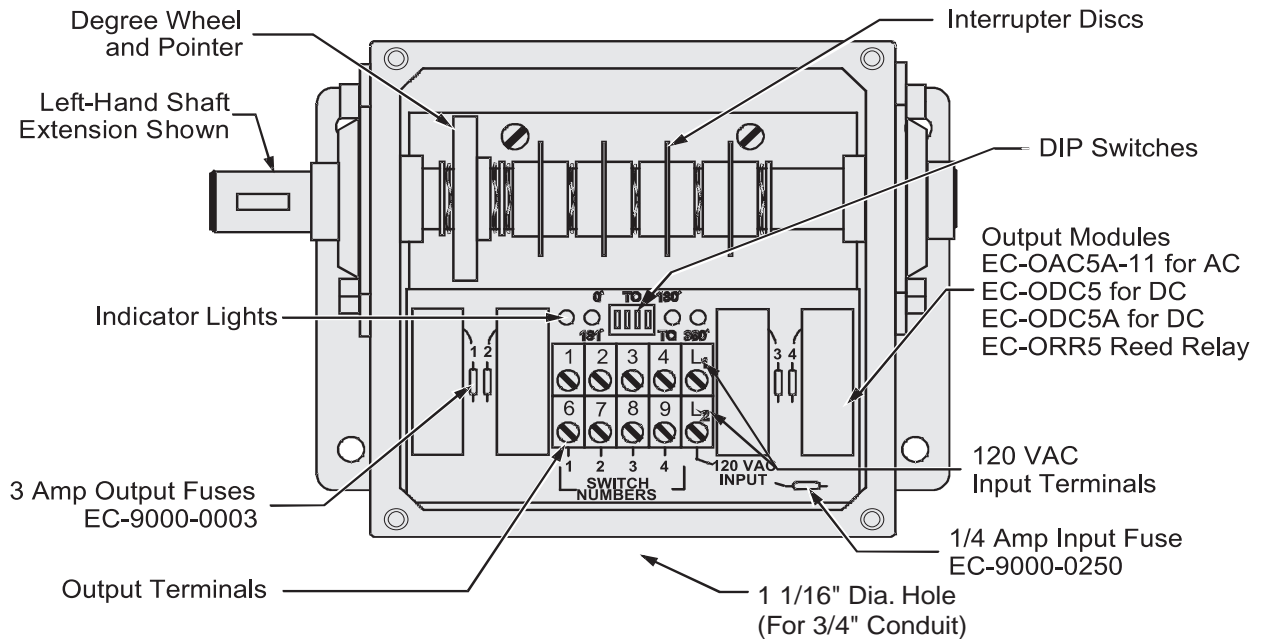
Output Voltage: 0 to 200 VDC
Output Current: 1 Amp
Derate .018 amp/°C above 45°C (113°F)
Values marked on actual unit denote derated operating parameters.

Reed Relay Output (EC-ORR5, white)

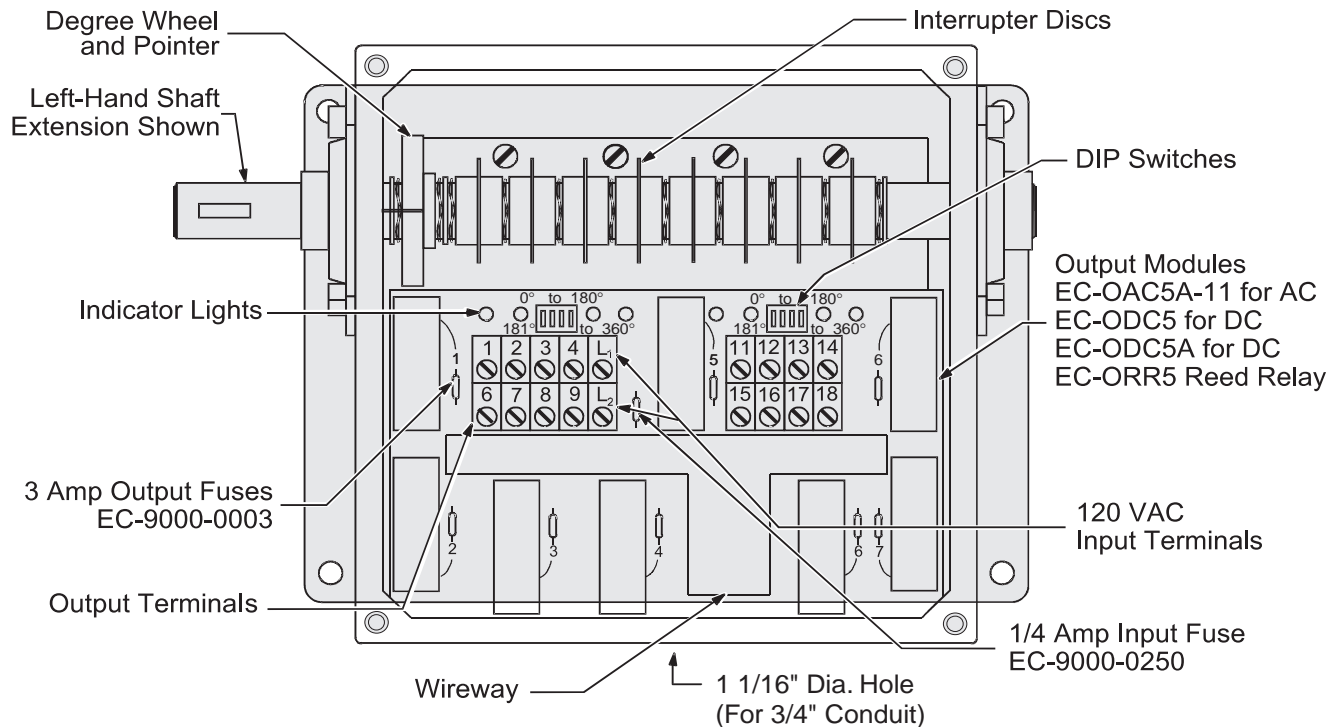
Output Type: Reed Relay contacts (min. life - 50 million cycles)
Max Switching Voltage: 200V DC or peak AC
Max Switching Current: 0.5A DC or peak AC (resistive loads only)
Max Carry Current: 1.0A DC or peak AC
For further information, please consult Electro Cam Corp.

Component Layout

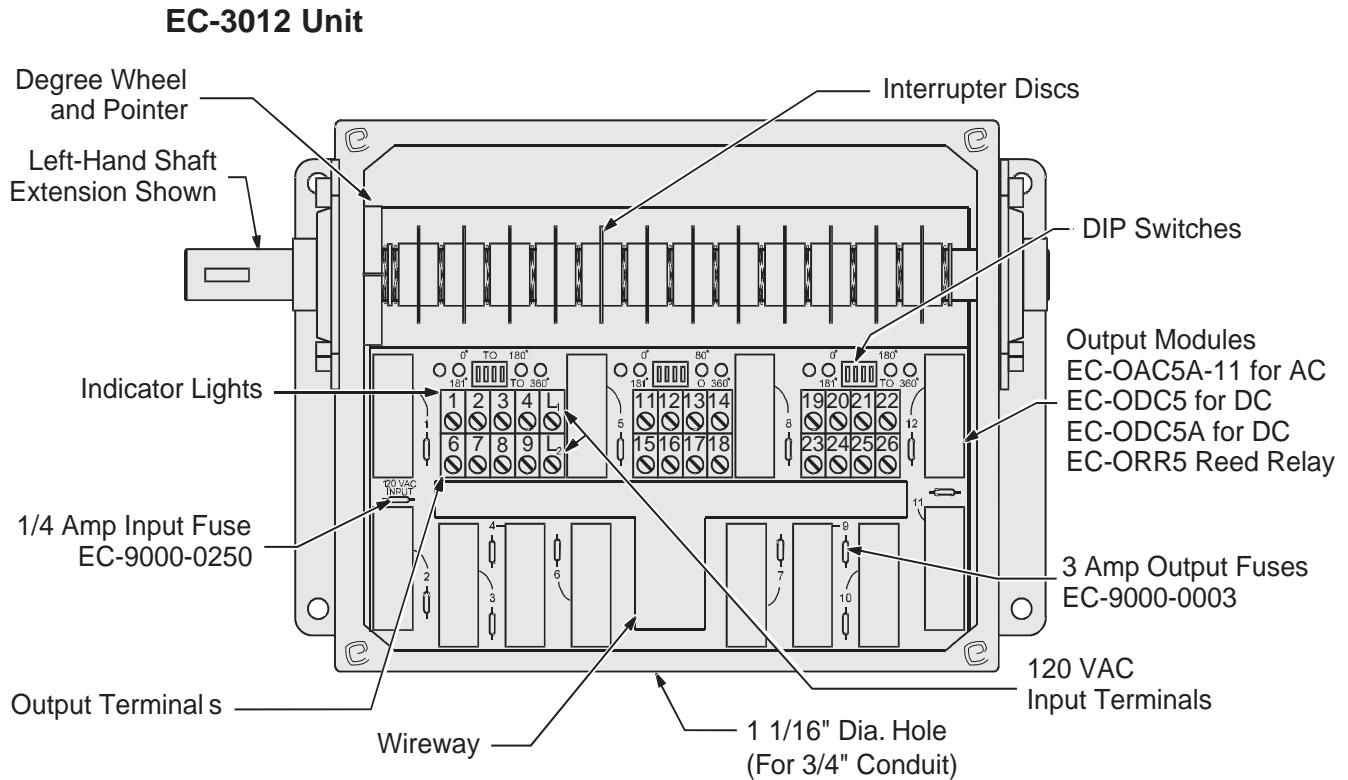
EC-3004 Unit



EC-3008 Unit



Component Layout



*In the component drawings, each upper and lower number pair on the terminal block represents an output. The table below will identify each output.

Terminal Block Numbers Upper Lower	Output Number	Terminal Block Numbers Upper Lower	Output Number	Terminal Block Numbers Upper Lower	Output Numbers
1 and 6	1	11 and 15	5	19 and 23	9
2 and 7	2	12 and 16	6	20 and 24	10
3 and 8	3	13 and 17	7	21 and 25	11
4 and 9	4	14 and 18	8	22 and 26	12

EC-3400 Series Units

All EC-3400 Series units have the same component layout as EC-3000 Series units except a stainless steel double-ended shaft extension and stainless steel enclosure with clamps to secure the cover are standard.