

# SYMAX PMAC 3-Phase Permanent Magnet Motors

Permanent Magnet AC motors are designed to be used only with a PMAC compatible VFD. They provide a small footprint and high efficiency at lower speeds/partial loads to save space, power, and money.

## Features

- Operation with a PMAC compatible VFD only. Applicable AutomationDirect drive series are [GS20](#), [ACN](#), or [CFW500](#)
- 230/460 VAC
- 6 pole, Interior Permanent Magnet (IPM) construction, base speed is 1800 or 1200 RPM, as noted.
- 25% - 40% Efficiency improvement vs standard induction motor.
- Maintains high efficiency under partial load
- 56 Frame-Premium Efficiency (IE3) ; 182 & larger frames-Super Premium Efficiency (IE4)
- "Performance Matched" to all leading brands of PWM drives guaranteeing years of trouble free operation
- TENV/TEFC - Operational to 20:1 constant torque open-loop
- Constant torque from 0 to base speed.
- Lower operating temperature for higher reliability
- Superior low speed torque and excellent torque linearity
- Wide voltage/frequency range meeting global requirements
- High power density (small footprint), low weight design
- Three year warranty (through Regal)
- UL recognized.
- CSA and CE as noted.

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.  
\* Certain heavy and oversized items can be shipped only via LTL.  
Check our website for current shipping method constraints by part number.

## Applications

Typical uses in industrial and commercial pump, fan, or conveyor VFD applications that require high efficiency at various speeds.

Motor Specifications – 3-Phase											
Part Number*	Price	HP	Base RPM*	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Frame Material	Weight (lb)	Drawing Links
<b>C-Face with Rigid Base</b>											
<a href="#">SY001</a>	\$611.00	1/2	1800	230/460 VAC	1.0	TENV	N/A	S56C	Rolled Steel	12	<a href="#">PDF</a>
<a href="#">SY003</a>	\$710.00	1						S56C		20	<a href="#">PDF</a>
<a href="#">SY004</a>	\$864.00	1 1/2						S56C		26	<a href="#">PDF</a>
<a href="#">SY005</a>	\$1,160.00	2						S56C		31	<a href="#">PDF</a>
<a href="#">SY007A</a>	\$1,689.00	5	1200	230/460 VAC	1.0	TEFC	N/A	184TC	Cast-iron	154	<a href="#">PDF</a>
<a href="#">SY036</a>	\$1,754.00	3						182TC		Rolled Steel	116
<a href="#">SY066</a>	\$1,389.00	3	1800	184TC	110	<a href="#">PDF</a>					
<a href="#">SY067</a>	\$1,701.00	5		213TC	130	<a href="#">PDF</a>					
<a href="#">SY068</a>	\$1,804.00	7 1/2		215TC	125	<a href="#">PDF</a>					
<a href="#">SY069</a>	\$1,916.00	10								139	<a href="#">PDF</a>



\*Base RPM at 90Hz for 1800RPM and 60Hz for 1200RPM motors.

Performance Data - 3-Phase																			
Part Number	HP	F.L. RPM	Max RPM	Current @ 230V/460V (Amps)			Torque (lb-ft)			F.L. Effic. %	F.L. Power Factor	Resistance Main	Rotor Inertia (lb-ft <sup>2</sup> )	"Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)"					
				No Load 460V	Full Load 230/460V	Locked Rotor	Full Load	Locked Rotor	Break-down					R1	R2	Ld1	Ld2	Lq1	Lq2
<b>C-Face with Rigid Base</b>																			
<a href="#">SY001</a>	1/2	1800	2160	0.3	1.9/0.80		1.46			83	80	0	3.17	3.3	13.2	17.3	69	40.6	162
<a href="#">SY003</a>	1	1800	2160	0.1	3.44/1.71		2.92			87	80	0	6.19	1.07	4.28	9.9	39.7	21	84.9
<a href="#">SY004</a>	1 1/2	1800	2160	0.3	5.4/ 2.7		4.38			86	80	0	9.22	5.3	2.12	5.44	21.8	12.62	50.5
<a href="#">SY005</a>	2	1800	2160	0.9	6.7/3.55		5.82			86	80	0	11.8	0.38	1.5	4.46	17.8	10.7	42.8
<a href="#">SY007A</a>	5	1800	2160	0.5	11.6/5.8		14.6			94.9	86	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<a href="#">SY036</a>	3	1200	4000	0.6	7.0/3.5	N/A*	13.1	N/A*	N/A*	93	86	0	0.46	0.435	1.74	9.86	39.4	12.1	48.3
<a href="#">SY066</a>		1800	2250	0.5	6.6/3.3		8.75			91.4	85	0	0.19	0.71	2.84	11.95	47.8	23.23	92.9
<a href="#">SY067</a>	5	1800	2250	0.45	11.6/5.8		14.6			93.9	85.7	0	0.46	0.8	0.2	17.2	4.3	34.6	8.7
<a href="#">SY068</a>	7 1/2	1800	2250	0.4	17.2/8.6		21.87			94.1	88	1.34	0.58	0.67	0.16	17.3	3.8	37.2	7.1
<a href="#">SY069</a>	10	1800	2250	2	24.7/12.3		29.18			94.5	85	0	1.1	0.397	0.1	10.8	2.7	20.4	5.1

\* Data not applicable for a PMAC motor

# Regal AC Motors – MAX Series 3-Phase High Performance Inverter-Duty Motors

Regal 3-Phase High Performance Inverter Duty Motor Selection					
Manuf / Application	Marathon MAX Series High Performance Inverter Duty				
Series	Micro MAX™	MAX+	Black Max®	Blue Max®	Symax PMAC
<b>Electrical Characteristics</b>					
HP range	1/4 - 10	1/2 - 5	1/4 - 30	40 - 100	1/2 - 10
Base speed (# poles)	1800 (4)	1800 (4)	1800 (4) and 1200 (6)	1800 (4)	1800 (6) , 1200(6)- VFD operation only
Standard voltage	230/460 (<1/2 hp are 230V only)	230/460	230/460 and 575	230/460	230/460
Ph/Base frequency (Hz)	3 / 60				
Service factor	1.0	1.0	1.0	1.0	1.0
Design code (NEMA)	A or B (varies by model)	A (1/2 –1 hp) B (>1hp)	A	A	n/a
Insulation class	H	F	F	H	F and H
Insulation system	CR200 magnet wire	CR200 magnet wire	MAX GUARD®		
Duty cycle	Continuous				
Thermal protection	None		Class F thermostats		
<b>Mechanical Characteristics</b>					
Frame size (mounting)	56C - 215TC	56C - 184TC	56C - 286TC	324T(C) - 405T(C)	56C(Z), 182TC, 184TC, 213TC,215TC
Enclosure	TENV and TEFC	TENV	TENV	TEFC and TEBC	TENV and TEFC
Frame material	Rolled Steel	Rolled Steel (<2hp) Cast-iron (2hp) Aluminum (>2hp)	Rolled Steel w Al face Cast-iron Aluminum	Cast-iron	Rolled Steel or Cast-iron (varies by model)
End bracket material	Aluminum	Cast-iron	Aluminum, Cast-iron	Cast-iron	Steel
Conduit box material	Steel	Steel	Steel	Cast-iron	Steel
Fan guard material	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Cast-iron	Rolled Steel or Cast-iron (varies by model)
Fan material	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Polypropylene	Polypropylene
Lead termination	Conduit box except Terminal block (<1/2 hp)	Conduit box	Conduit box	Conduit box	Conduit box
Standard mounting	C-Face with Rigid Base & C-Face Round Body	C-Face with Rigid Base	C-Face with Rigid Base	C-Face with Rigid Base	C-Face with Rigid Base
Drive end shaft slinger	No	No	No	Yes	-
Paint	Black powder- coat; Black enamel	Black powder; Black enamel	Black enamel	Blue enamel	Black powder- coat; Black enamel
Bearings	Ball (C3 fit)	Ball (C3 fit)	Ball (C3 fit)	Ball (C3 fit)	Ball
Grease	Exxon Polyrex EM	Exxon Polyrex EM	Exxon Polyrex EM	Exxon Polyrex EM	Exxon Polyrex EM
Standard conduit box assembly position	F1 (1/4 & 1/3 hp) F3 (all others)	F1, reversible to F2 (2hp) F1 (all others)	F1, reversible to F2	F1, reversible to F2	F1
<b>Performance Characteristics</b>					
Constant torque speed range	20:1 (TEFC) 1000:1 (TENV)	1000:1	1000:1 (TENV)	2000:1 (all enclosures)	20:1
Variable torque speed range	-	-	-	-	10:1
Constant horsepower speed range	2:1	2:1	2:1 (90–120Hz intermittent @50% duty cycle)	2:1	2:1
Temperature rise	B	varies by model #	varies by model #	F (TEFC) B (TEBC)	F
Encoder provisions	No	Yes	Yes	Yes	No
<b>Other Characteristics</b>					
Warranty *	3 years (through Rexnord Regal for MAX, XRI and 4N1 Motors)				
Agency listings **	UL Recognized, CSA Certified, CE Mark++				

\* See Terms and Conditions for motor warranty explanation. Marathon warranty service can be arranged through Rexnord Regal service centers. See list of service centers on our website at [www.automationdirect.com](http://www.automationdirect.com).

\*\* To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.

++Some Symax PMAC models are not CE Mark. See Symax for details