

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 |
| C-Face with Rigid Base | | | | | | | | | | | |
| SY001 | \$611.00 | 1/2 | 1800 | 230/460 VAC | 1.0 | TENV | N/A | S56C | Rolled Steel | 12 | PDF |
| SY003 | \$710.00 | 1 | | | | | | S56C | | 20 | PDF |
| SY004 | \$864.00 | 1 1/2 | | | | | | S56C | | 26 | PDF |
| SY005 | \$1,160.00 | 2 | | | | | | S56C | | 31 | PDF |
| SY007A | \$1,689.00 | 5 | 1200 | 230/460 VAC | 1.0 | TEFC | N/A | 184TC | Cast-iron | 154 | PDF |
| SY036 | \$1,754.00 | 3 | | | | | | 182TC | | Rolled Steel | 116 |
| SY066 | \$1,389.00 | 3 | 1800 | 184TC | 110 | PDF | | | | | |
| SY067 | \$1,701.00 | 5 | | 213TC | 130 | PDF | | | | | |
| SY068 | \$1,804.00 | 7 1/2 | | 215TC | 125 | PDF | | | | | |
| SY069 | \$1,916.00 | 10 | 1800 | 230/460 VAC | 1.0 | TEFC | N/A | 215TC | Cast-iron | 139 | PDF |



*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-fft ²) | "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 |
| C-Face with Rigid Base | | | | | | | | | | | | | | | | | | | |
| SY001 | 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 |
| SY003 | 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 |
| SY004 | 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 |
| SY005 | 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 |
| SY007A | 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 |
| SY036 | 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 |
| SY066 | | 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 |
| SY067 | 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 |
| SY068 | 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 |
| SY069 | 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 |
| Electrical Characteristics | | | | | |
| 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 | | |
| Mechanical Characteristics | | | | | |
| 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 |
| Performance Characteristics | | | | | |
| 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 |
| Other Characteristics | | | | | |
| 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.

** 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