

# General purpose aluminum frame motors

The right choice for efficiency and performance



NEMA Low Voltage Motors

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**SIEMENS**

# Siemens GP100A Aluminum Frame Motors

Precision construction, durable performance



## Innovation is why

The line of Siemens GP100A aluminum frame motors is not an evolution in motor design, but a total revolution. This distinctive line of NEMA frame motors is based on 14 decades of Siemens motor design leadership, manufacturing expertise and application knowledge combined with innovative and elegant new technologies to provide maximum value.



## Bringing value and performance together

The GP100A precision die cast aluminum frame, bearings housing and bolt-on feet represent a major step forward in motor design innovation. These motors provide high structural strength through the use of finite element analysis to strategically place material within each component to resist the effects of stress and vibration. They weigh less than comparable rolled-steel frame motor designs, yet provide more structural strength for a wider variety of industrial applications.

## Mechanical design

When you look at the sleek design of these motors, you know at a glance they are more than standard NEMA motors. Siemens engineers started with a clean sheet of paper when designing these

motors. They used decades of motor design experience backed by the latest computer-aided design tools to engineer a line of motors like no other. It is a line of motors that offers the ultimate in rugged construction, cool operation, high performance and application flexibility.

## Optimized electrical design

These motors are designed to provide superior operating performance and energy efficiency. Their advanced electromagnetic design meets and often exceeds the requirements of the Energy Independence & Security Act of 2007 (NEMA MG1– table 12-12). Our available die cast copper rotor design provides efficiencies that are even higher for lower operating costs.

## Advanced materials

Though you probably will never see them, the materials within these motors have been specially selected to provide high performance and long service life. For example, the insulation materials used for the windings result in an anti-corona system that is designed to withstand voltage spikes caused by fast switching IGBTs from adjustable speed drives.

# A systems approach to extended service life



Siemens engineers evaluated each component that affects motor service life and developed individual systems within Siemens GP100A motors that form a complete system to maximize service life.

## Cooling system

The advanced cooling system developed for these motors is based on minimizing heat sources within the motor and then quickly dissipating any remaining heat. This highly refined system includes:

- An engineered finned frame design that provides optimum heat dissipation. Better than conventional cast iron or rolled steel frame designs.
- High flow volume cooling fan and unique structural foam fan cover for optimum air flow.
- A low-loss stator and rotor designed to work together to minimize heat generation. The available die cast copper rotor design leads the industry in providing optimum energy efficiency.

## Bearing system

Studies have shown that the motor bearing system is one of the most important elements for long service life. Siemens features:

- Oversized lubricated-for-life shielded bearings that meet demanding Siemens engineering standards.
- Specially formulated polyurea-based grease provides just the right lubricant to the bearings over a wide ambient temperature range.
- Bearing housings and frame mating surfaces are precision machined for accurate alignment.
- Bearing retention insured by a unique steel insert in the bearing housing.
- Dynamically balanced rotor assembly meets or exceeds NEMA MG1 requirements.



## Insulation system

The “heart” of a motor design is the winding insulation system. Siemens GP100A motors feature:

- A proprietary, inverter-rated, Class F insulation system with a Class B temperature rise @ 1.0 service factor.
- Only the finest materials and varnish system are used in the manufacture of the stator.
- The system meets or exceeds NEMA MG1, Part 30 and 31 for adjustable speed drive operation.
- All windings must pass CIV (corona inception voltage) test to insure resistance to voltage spikes induced by adjustable speed drives.

## Contaminant protection system

To protect GP100A motors from the effects of moisture and industrial contaminants. These motors feature:

- Epoxy enamel-coated cast aluminum frame, bearing housings and conduit box.
- Polycarbonate cooling fan with structural foam fan cover.
- Non-hygroscopic insulation system.
- Corrosion resistant hardware and aluminum nameplate.
- Condensation drain holes in the lowest point on the motor frame and both ends of the motor.
- V-ring slinger on drive end shaft extension.

## Mounting and installation system

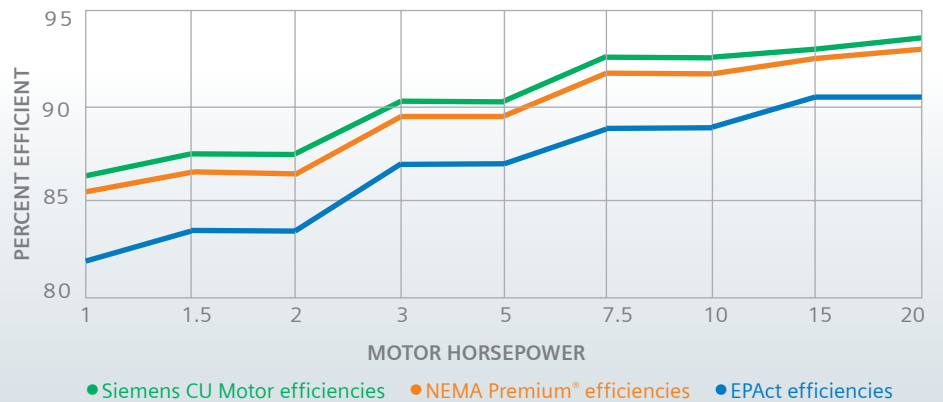
- Specially designed bolt-on mounting feet permit F1, F2 and F3 mounting flexibility without the need to disassemble the motor.
- The six-hole design of the frame makes locating the motor fast, easy and flexible.
- An oversized, diagonally-split, conduit box includes a grounding lug and provides for mounting on 90° increments.
- Permanently marked leads provide easy connections.
- Siemens GP100A motors are available with C-face or D-flange construction.

# Motor efficiency

## Reducing your total cost of operation



Siemens aluminum frame motors have been developed to provide the rugged performance and long service life you have come to depend on – plus exceptional operating efficiencies to further reduce your company’s cost of ownership.



Siemens GP100A motors from 1 to 20 horsepower are available with an optional die cast CU copper rotor that delivers operating efficiencies above NEMA Premium® (NEMA MG1, table 12-12) specifications.



NEMA Premium® is a certification mark of the National Electrical Manufacturers Association.

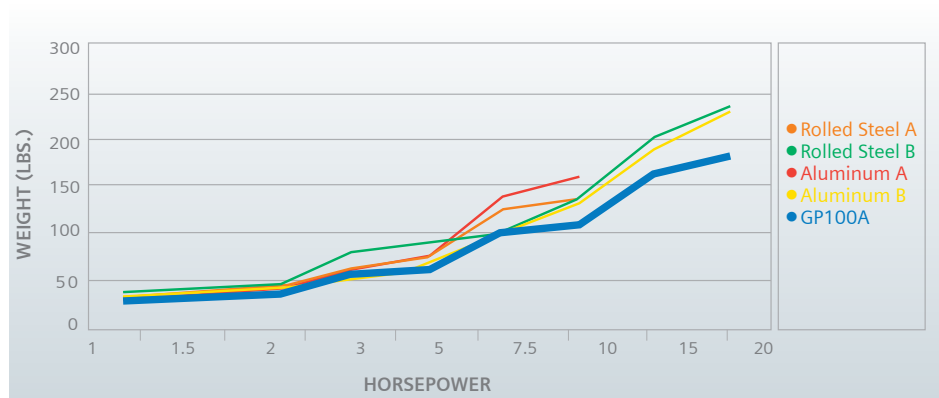
# Data, facts and details

## A new generation of motors

GP100A General Purpose Aluminum Frame – Technical Overview				
HP Range	1 – 20			
Frame Size (FS)	140 – 250			
Efficiency	NEMA Premium® (NEMA MG1, table 12-12) NEMA Premium® Plus with CU copper rotor (Exceeds MG1 Table 12-12)			
Voltage	208 – 230/460 V, 575V			
Service Factor	1.15 sine wave			
Electrical Design	NEMA Design B			
Insulation	Class F NEMA MG1 Part 31			
Temperature Rise	Class B @ 1.0 SF, Class F @ 1.15 , SF Sine Wave			
Conduit Box (oversized)	Die cast aluminum			
Fan Cover	Plastic			
Cooling Fan	Bi-directional polypropylene FS: 140 – 250			
Shaft	High strength C1045 carbon steel			
Bearing Housing	Cast aluminum			
Bearing Type	Double shielded FS: 140 – 250			
Lubrication	Polyurea-based grease			
Vibration	0.15 IPS			
Nameplate	Engraved			
Condensation Drain	T-Drains: Lowest point (2)			
Hardware	Rust resistant			
Inverter Duty		VT 20:1	CT 10:1	CT 4:1
	Alum. Rotor	FS 140 – 250		FS 140 – 250
	CU Rotor	FS 140 – 250	FS 140 – 250	

### Horsepower to weight comparison

Siemens GP100A motors offer exceptional weight savings when compared with other aluminum or rolled-steel motors.



Siemens Industry, Inc.  
Drive Technologies Division  
3333 Old Milton Parkway  
Alpharetta, GA 30005  
1-800-241-4453

[info.us@siemens.com](mailto:info.us@siemens.com)

[www.usa.siemens.com/motors](http://www.usa.siemens.com/motors)

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