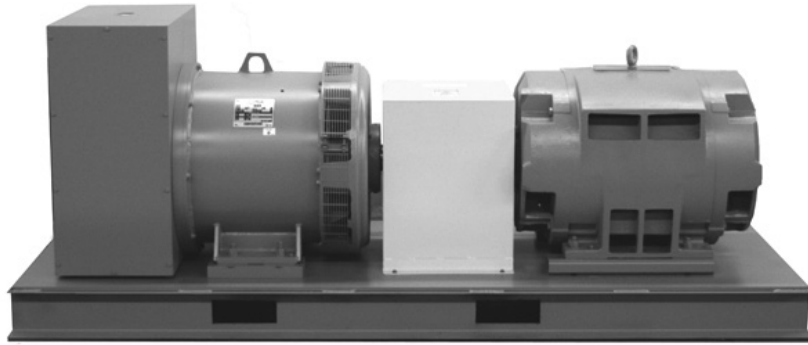




# Horlick Company, Inc.

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## 400SC Model Motor-Generator Set 60-400 Hz Frequency Converter



### Features

*Economical*

*Output frequency 400 Hz ( $\pm 1\%$ )*

*Utilized in military and industrial applications*

*Easy to operate*

*Exceptional MTBF*

*Minimal maintenance required*

### Description

Horlick 400SC Model motor-generator sets consist of a 4-pole, 2000 RPM, induction motor and a 24-pole, 2000 RPM, synchronous generator mounted on a rigid steel base and connected via a flexible coupling. The output frequency on standard units is 400 Hz ( $\pm 1\%$ ). If tighter frequency regulation is required, the motor can be equipped with an encoder to provide closed loop speed control with the variable frequency drive that operates it. This enhancement is an option that can be added to improve the frequency regulation to 400 Hz ( $\pm 0.1\%$ ). 400SC Model motor-generator sets are rated for continuous duty and they provide a clean source of 400 Hz power isolated from switching transients, voltage fluctuations and power line noise. They are widely used by transformer manufacturers, along with manufacturers that supply components to the aircraft, aerospace and military markets. They are ideal for an application that requires 400 Hz power.

Horlick 400SC Model motor-generator sets are designed to be installed inside where an 80-85 dBA noise level is acceptable. As an option, 400SC Model motor-generator sets can be mounted in a weather-resistant enclosure, a sound-reduced enclosure, a cargo container or a trailer. Each 400SC Model motor-generator set is equipped with a standard control system that is either wall-mounted or free standing. The components in the control system perform the functions necessary to operate, monitor and protect the system.



### Specifications

#### Motor

- Induction, 2000 RPM, 4-pole
- Continuous duty, Class F insulation, open drip-proof
- Selection of 60 Hz, 3-phase input voltages to include: 208V, 230V, 460V or 575V

#### Generator

- Brushless synchronous, 2000 RPM, 24-pole
- Continuous duty, Class F insulation, open drip-proof
- Standard output voltage to include: 120/208V, 3-phase
- Rated at 0.8 power factor to insure proper handling of inductive loads

#### Mechanical Construction

- Motor and generator mounted on rigid steel base
- Flexible coupling drive system
- Complete OSHA coupling guard
- Forklift or pallet jack provisions

#### Standard Control Systems

Each motor-generator set is equipped with a separate wall-mounted or floor-standing control panel. The standard package includes the following components:

#### Motor Controls

- Input disconnect, non-fused
- Fuse block and fusing for motor short circuit protection
- Variable frequency drive with intermittent duty brake resistor
- Start-Stop push buttons with terminal strip for remote start/stop
- Control power transformer with fusing
- Pilot light to indicate "Motor Run"

#### Generator Controls

- Analog meter package to include voltmeter, ammeter and frequency meter
- Voltmeter and ammeter phase selector switches
- Voltage regulator,  $\pm 1\%$  regulation accuracy, with automatic buildup and rheostat for control of regulated voltage
- Output circuit breaker, molded case, to protect generator against short circuit or prolonged overload
- Pilot light to indicate "400 Hz Load On"



### Performance Characteristics

- **Voltage regulation:**  $\pm 1\%$  from no-load to full-load at rated power factor
- **Voltage steady state stability:**  $\pm 0.5\%$  from no-load to full-load at rated power factor
- **Voltage adjustment range:**  $\pm 10\%$  in stepless increments of nominal output voltage
- **Frequency regulation:** 400 Hz (+/-1%)
- **Voltage transient:** When a full-load at rated power factor is applied or released, the resultant instantaneous droop or overshoot will not exceed 30% of preset value
- **Voltage recovery time:** After a full-load is applied or released, the output voltage will return to the regulation band within 500 milliseconds
- **Harmonic distortion:** Less than 3% max. total distortion factor and less than 2.5% max. single-phase when measured line-to-line
- **Ambient operating conditions:** Temperature at 40°C, relative humidity at 95% (higher temperature rating for outdoor use available upon request)
- **Duty cycle:** Motor-generator set and controls are rated for continuous duty

### Motor-Generator Options

- Closed loop feedback to improve frequency regulation to (+/-0.1%)
- Weather-resistant, NEMA 3R enclosure
- Oversized generator to support motor-starting transients
- Thermal bearing and winding protection
- Input phase protection relay
- Line drop compensation
- Generator over/under voltage protection
- Digital meter package
- Remote meter package with start/stop controls

**400SC Model  
Three Phase Output Ratings**

Model	Generator Rating at 0.8 PF		Output Current at 120/208V	Motor Rating	Motor Starting Method
	KVA	KW			
400SC-103	12.5 KVA	10 KW	35 A	20 HP	Variable Frequency Drive
400SC-153	18.8 KVA	15 KW	52 A	25 HP	Variable Frequency Drive
400SC-203	25 KVA	20 KW	69 A	30 HP	Variable Frequency Drive
400SC-253	31.3 KVA	25 KW	87 A	40 HP	Variable Frequency Drive
400SC-303	37.5 KVA	30 KW	104 A	50 HP	Variable Frequency Drive
400SC-403	50 KVA	40 KW	139 A	60 HP	Variable Frequency Drive
400SC-503	62.5 KVA	50 KW	174 A	75 HP	Variable Frequency Drive
400SC-603	75 KVA	60 KW	208 A	100 HP	Variable Frequency Drive
400SC-753	93.8 KVA	75 KW	261 A	125 HP	Variable Frequency Drive
400SC-1003	125 KVA	100 KW	347 A	150 HP	Variable Frequency Drive
400SC-1203	150 KVA	120 KW	417A	200 HP	Variable Frequency Drive