Horlick Company, Inc.

91 Pacella Park Drive, Randolph MA 02368, Phone 781-963-0090, Fax 781-986-1540

400TR Model Motor-Generator Set

60-400 Hz Frequency Converter

Features

Precise 400 Hz output frequency
Common frame design
Easy to operate
Exceptional MTBF
Minimal maintenance required

Description

Horlick 400TR Model motor-generator sets consist of a 6-pole, synchronous motor and a 40-pole, synchronous generator mounted on a common shaft. These units run at 1200 RPM and deliver an output frequency of precisely 400 Hz from no-load to full-load. 400TR 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 at naval and air force bases, missile and ground support installations, radar and communications test sites, airports and university laboratories. 400TR motor-generator sets have high overload capability and their rugged design make them ideally suited for military applications where continuous run time in a harsh environment is required.

Horlick 400TR Model motor-generator sets are designed to be installed inside where an 80-85 dBA noise level is acceptable. As an option, 400TR Model motor-generator sets can be mounted in a weather-resistant enclosure, a sound-reduced enclosure, a cargo container or a trailer. Each 400TR 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

- Brushless synchronous, 1200 RPM, 6-pole
- Continuous duty, Class F insulation, open drip-proof
- Selection of 60 Hz, 3-phase input voltages to include: 208V, 230V or 460V

Generator

- Brushless synchronous, 1200 RPM, 40-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 common shaft
- Reinforced steel frame
- Precision machined and dynamically balanced rotor

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

- Motor starter with adjustable overload
- Start-Stop push buttons with terminal strip for remote start/stop
- Control power transformer with fusing
- Variable transformer for power factor control, with protective relay for motor out-of-step and field failure protection
- Analog meter package to include ammeter and run time meter
- Pilot lights to indicate "Motor Run" and "60 Hz Line Energized"

Generator Controls

- Analog meter package to include voltmeter, ammeter and frequency meter
- Voltmeter and ammeter phase selector switches (3-phase systems)
- Voltage regulator, ±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"
- Over voltage protection package to include output circuit breaker shunt trip

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Performance Characteristics

- ***Voltage regulation***: ±1% from no-load to full-load at rated power factor
- ***Voltage steady state stability***: ±0.5% from no-load to full-load at rated power factor
- ***Voltage adjustment range***: ±10% in stepless increments of nominal output voltage
- ***Frequency regulation***: Precise 400 Hz output from no-load to full-load
- ***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%
- ***Duty cycle***: Motor-generator set and controls are rated for continuous duty

Motor-Generator Options

- Weather-resistant, NEMA 3R enclosure
- Oversized generator to support motor-starting transients
- Thermal bearing and winding protection
- Input disconnect or circuit breaker
- Input phase protection relay
- Line drop compensation
- Digital meter package
- Remote meter package with start/stop controls

400TR Model
Three Phase Output Ratings

Model	Generator Rating at 0.8 PF		Output Current at 120/208V	Motor Rating	Motor Starting Method
400TR-103	12.5 KVA	10 KW	35 A	20 HP	Across the line
400TR-153	18.8 KVA	15 KW	52 A	25 HP	Across the line
400TR-203	25 KVA	20 KW	69 A	30 HP	Across the line
400TR-253	31.3 KVA	25 KW	87 A	40 HP	Across the line
400TR-303	37.5 KVA	30 KW	104 A	50 HP	Wye-delta
400TR-403	50 KVA	40 KW	139 A	60 HP	Wye-delta
400TR-503	62.5 KVA	50 KW	174 A	75 HP	Wye-delta
400TR-603	75 KVA	60 KW	208 A	100 HP	Wye-delta
400TR-753	93.8 KVA	75 KW	261 A	125 HP	Wye-delta
400TR-1003	125 KVA	100 KW	347 A	150 HP	Wye-delta
400TR-1253	156 KVA	125 KW	434 A	200 HP	Wye-delta
400TR-1503	188 KVA	150 KW	521 A	250 HP	Wye-delta
400TR-1753	219 KVA	175 KW	608 A	300 HP	Wye-delta
400TR-2003	250 KVA	200 KW	695 A	300 HP	Wye-delta
400TR-2503	313 KVA	250 KW	868 A	400 HP	Wye-delta
400TR-3003	375 KVA	300 KW	1042 A	500 HP	Wye-delta