

# High Horsepower Modular Design

## Description 800~1600HP

The SN-HH series drive is a high performance product that produces an output of adjustable voltage and frequency to control the speed of a squirrel cage induction motor. These modular design units have separate converter capacitor inverter sections installed in a common enclosure. Sections can be paralleled to increase capacity. This PWM design provides high starting torque by use of IGBT transistors. The drive provides 3 modes of control and speed accuracy to suit application requirements; V/Hz (2%), sensor less vector (0.1%), or flux vector control (0.01% / motor-mounted Resolver (standard) and drive-mounted PG-RD1 card required). Programmability, network capability, and flexibility are outstanding.

### Performance Features

- Ratings:
  - 600 to 1600 HP at 460 VAC,
  - 800 to 1600 HP at 600 VAC
- Overload capacity:
  - 150% for 60 sec CT
- Starting torque: 150%
- Electronic reversing
- Adjustable accel/decel: 0.1 to 6000 sec
- Controlled speed range:
  - (1) 40:1, (2) 100:1, (3) 1000:1
- Drive efficiency: 96 to 98%
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Jog forward and reverse
- Power loss ride-thru: 2 sec
- Inertia ride-thru
- Selectable auto restart after momentary power loss
- Programmable auto restart
  - (0 to 10 attempts) on resettable fault
- Critical frequency rejection:
  - 3 selectable, adjustable bands

### Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short circuit protection
- Ground fault protection
- Electronic motor overload
- Current and torque limit
- Overtorque/undertorque detection
- Fault circuit: overcurrent, overvoltage, and overtemperature
- Input/output phase loss

### Control Methods

- Volts/Frequency
- Open Loop Vector
- Closed Loop Flux Vector

### Service Conditions

- Ambient service temperature:
  - 10°C to 40°C (104°F)
- Humidity: non-condensing 95%
- Altitude: to 3300 feet
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz  $\pm$  5%
- 3-phase, 3-wire, phase insensitive

### Design Features

- 32-bit logic, including 16-bit DSP dependent on rating
- Alpha-numeric operator, removable, multilingual, 2 lines x 16 character
- 24 VDC control logic
- Programmable outputs. One form A and two open collector
- Timer function
- RS-232 communication port
- Multi-speed settings: 9 available
- Remote speed reference:
  - 10 to +10 VDC (20K ohms) or 4 to 20 mA (250 ohms)
- Setpoint (PID) control
- Signal follower: bias and gain
- Analog monitor output:
  - 10 to +10 VDC proportional to output parameters
- DC bus reactor
- Dual motor parameter sets
- Auto-tune to motor characteristics
- Easy access, parameter groups
- Common bus capability
- Programmable flash ROM, via RS232C, for custom applications
- Run and fault contacts (1A)
- Up / down / hold reference

### Additional V/Hz Features

- DC injection braking: ramp or coast to stop, adjustable current limited to 60% motor rating
- Frequency resolution:
  - 0.01 Hz w/ digital ref., 0.06 Hz w/ analog ref.
- Frequency regulation: (15° to 35°C)
  - 0.01% w/ digital ref., 0.1% w/ analog ref.
- Torque boost: full range, auto
- Current limited stall prevention during accel, decel and run
- Synchronized start into rotating motor via speed search
- Volts/hertz ratio: 15 preset and one infinitely-adjustable pattern
- Slip compensation

### Additional Vector Control Features

- Speed resolution:
  - 0.01% with digital reference
  - 0.1% with analog reference
- Speed regulation: (15° to 35°C)
  - (2) 0.1% with digital reference
  - (3) 0.01% with digital reference
  - (3) 0.1% analog reference
- (3) Encoder response:
  - Standard: motor-mounted Resolver
  - Optional: 300kHz with motor-mounted PG
- (3) Stall torque: to 150% at zero speed for 1 minute. 100% continuous