

Embedded DeviceNet, Open Loop Vector, Microsize!



V7N Drive with Embedded DeviceNet 1/8 - 10 HP

Yaskawa's V7N is a general purpose, AC motor drive for facilities using DeviceNet communications. This drive provides amazing performance in a small package, and at significant cost benefit compared to drives that use optional plug-in interface cards. The V7N was created by embedding DeviceNet into the control card of the highly successful V7 drive.

The V7N provides low motor noise and high starting torque. Two control methods are provided – V/Hz and Open Loop Vector control for precise speed regulation. Open Loop Vector control also provides higher torque at low speed. The V7N is designed for constant torque applications, with current overload rating of 150% for 60 seconds.

The V7N is fully featured and compact. The digital operator provides a 4-digit LED status display with a built-in analog speed potentiometer, as well as digital programming of almost 200 parameters. The V7N includes 3 multi-function DeviceNet inputs, four multi-function digital inputs, an analog input, a multi-function DeviceNet output and two multi-function open collector outputs.

The embedded DeviceNet allows 64 network nodes. It includes programmable MAC ID and baud rate. The V7N supports drive type profiles with flash capability for easy software upgrades. Network status LEDs are visible through the cover and a plugable connector simplifies wiring.

One of the outstanding options for the V7N is DriveWizard. This software tool is used for online and offline configuration, monitoring, and archiving to a personal data assistant or PC. CASE is another software that can add functionality to the drive by reconfiguring drive defaults, establishing presets for OEM equipment, and by eliminating peripheral controls and PLCs.

This V7N with DeviceNet is provided in a NEMA 1 enclosure from 1/8 to 10 HP at 230 VAC and 1/2 to 10 HP at 460 VAC.

The V7N is ideally suited for applications such as conveyors, grinders, centrifuges, pumps, fans, machine tools, packaging, food processing, automotive assembly, and textiles.

V7N is the perfect choice wherever high performance, small size, and DeviceNet Communication are required.

(The V7 drives family includes the basic V7 and the V74X. Both offer various network communications via optional plug-in interface cards.)



V7N

Performance Features

- Ratings: 1/8 to 10 HP at 230 VAC, 1/2 to 10 HP at 460 VAC
- Constant torque overload rating: 150% for 1 min., 200% for 30 Sec. (250% peak)
- DC injection braking, ramp to stop
- Electronic reversing
- Adjustable accel/decel: 0.01 to 6000 seconds
- Controlled speed range: 40:1⁽¹⁾ 100:1⁽²⁾
- Speed regulation ± 0.5 to 1% with slip compensation⁽¹⁾ $\pm 0.2\%$ ⁽²⁾
- Drive efficiency: 95%
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Frequency resolution: 0.01 Hz with digital reference 0.06 / 60 Hz with analog reference
- Frequency accuracy: 0.01% with digital command 0.5% with analog command
- Volts / hertz ratio: infinitely adjustable pattern
- Open loop vector control
- DC Injection braking: adjustable amplitude, duration, current limited
- Torque boost: full range, auto
- Power loss ride-thru: 0.5 sec.
- Speed search
- Auto restart
- 3 Critical frequency rejection settings
- Slip Compensation
- Energy Savings Function
- PID with loss of feedback function

Design Features

- 16-bit microprocessor logic
- Digital keypad operator with analog speed pot
- LED status display
- Copy Keypad Function
- Remote Mount Keypad Capability
- RJ-45 Style Digital Operator Connector
- 4 multi-function digital inputs
- 3 multi-function DeviceNet inputs
- Programmable DeviceNet output
- 24 VDC control logic compatible with sourcing or sinking outputs (PNP or NPN)
- Carrier frequency: 10 kHz maximum
- 16 multi-speed settings plus jog speed
- Remote speed reference: 0-10 VDC (20 kohms) or 4-20 mA (250 ohms)
- Signal follower: bias and gain
- 2 programmable open collector outputs
- Approximately 200 parameters
- Digital pulse train input (30 kHz max.)
- Cooling fan controlled by drive run/stop
- UL and cUL listed; CE approved
- UL recognized electronic overload
- MTBF: exceeds 28 years
- Dynamic Braking Transistor
- NEMA 1 enclosure

Protective Features

- Current limit, stall prevention during accel, decel, and run
- Motor and drive overload
- Over voltage
- Instantaneous over current
- Short circuit
- Under voltage
- Heatsink overheat
- Ground fault protection
- Over/under torque

DeviceNet Features

- Embedded DeviceNet
- Quick disconnect style plug
- Baud rate: 125/250/500 KBps
- Baud rate setting: Programmable or DIP switches
- Device Profile: AC Drive device type 02
- Message types:
 - Explicit Message I/O polled message
 - Group 2 only server
- MAC ID setting: programmable or DIP switches

Service Conditions

- Ambient service temperature: -10° to 40°C (14° to 105°F)
- Ambient storage temperature: -20° to 60°C (-4° to 140°F)
- Humidity: to 95% non-condensing
- Altitude: to 3280 ft; higher by derating
- Service factor: 1.0
- Input voltage: -15% to +10% 200 to 230 VAC, 380 to 460 VAC
- Input frequency: +/-5%; 50/60 Hz
- Phase sequence insensitive

Options

- Dynamic Braking resistor (external)
- External DC link reactor
- DriveWizard
- CASE software

⁽¹⁾ V/Hz Mode

⁽²⁾ Open Loop Vector Mode

Related Products



V7 Drive General purpose, V/Hz or open loop vector, NEMA 1, 1/8 - 10 HP.
Flyer FL.V7.01



V74X Drive General purpose, V/Hz or open loop vector, integral NEMA 4X/12, 1/8 - 15 HP.
Flyer FL.V74X.01



J7 Drive General purpose, V/Hz, microsize, 1/8 - 5 HP.
Flyer FL.J7.01



ModConnect[®]



Software

DeviceNet



V7N