Fully Optimized Pump and Fan AC Drives

Targeted Design. Full-Featured Capability

The new Baldor VS1PF AC drive delivers all the power, reliability, and functionality you would expect from the most recognized leader in motors and drives. Fully optimized for the pump and fan industry, the VS1PF drive is both feature rich and user friendly—assuring you convenient, dependable service under a wide range of operating conditions, as well as voltage dips and surges.

Ideally suited for centrifugal loads such as pumps and fans, it is available from 5 – 700 horsepower. In addition to V/Hz mode, the VS1PF can also operate in sensorless vector mode for special pumping applications requiring constant torque.

Plus, the new VS1PF variable speed AC drive is backed by our real-world, plant-floor knowledge and more than 100 years experience. It is designed to be packaged with bypass, operator controls and power conditioning options to assure quality and consistent performance.

BALDOR VS DRIVES

Optimum Versatility. Maximum Control.

Two Control Modes

VS1PF has two control modes to cover nearly every pump and fan application with our common drive platform.

V/Hz Control

Our VS1PF drive uses a traditional inverter V/Hz control method with linear, fan/pump, or custom curves. Its easy setup, quick startup, and right-out-of-the-box operation make it among the most popular variable speed motor controls. It is ideal for applications where multiple motors are operated simultaneously from one motor control.

Sensorless Vector Control

The VS1PF can also function in a sensorless vector mode for constant torque pumps such as progressive cavity pumps.

Specialized Drive With Performance Proven Features

- 230V and 460V input ratings
- Output frequency 0.01 – 120 Hz
- Carrier frequency 0.7 – 15 kHz up to 22 kW
- Standard NEMA 1 enclosure up to 15 HP
- IP00 standard with optional NEMA 1 conduit kit up to 125 HP
- IP00 power module for packaging in standard NEMA enclosures above 125 HP
- -15% – +10% input voltage variation
- -10° – +50°F operating temperature
- Selectable PNP/NPN signal input
- Pull-apart control terminals
- Built-in RS485/Modbus-RTU communication
- Versatile control I/O configuration

PID Control

In centrifugal pump and fan applications, PID control is provided as a standard function, helping maintain a constant process control of pressure, flow, and oil level. This function includes pre-PID, sleep/wake up, and output inverse sub-functions.

External PID

This function can be used to regulate an unrelated external process, such as a temperature loop, as well as provide cascaded control to the internal PID. It can also be used to control the motor speed directly.

Internal PID

Not only does this regulate process variables, but the drive's internal PID control function can also receive references from an analog input, keypad, or communications port. In addition, it can receive process feedback via an analog or pulse input.

Pre-Heat

This allows the drive to maintain residual heat in the motor, which helps eliminate condensation in damp conditions when the motor is not in use. In the drive, an adjustable, low-level DC current is applied to the stator windings either continuously or on a duty cycle basis.

Flying Start

With the flying start function, the drive senses the motor's rotation prior to producing torque. This allows the drive output to be synchronized with the rotating motor during startup. It is particularly useful when back-pressure causes a pump to spin backward or when an updraft causes the fan to rotate (when the drive is disabled).

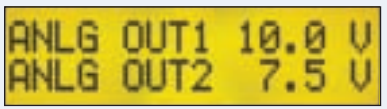
Sleep/Wake

The sleep/wake function disables/re-enables the drive automatically as demand dictates. This helps eliminate unnecessary operation at idle speeds, thus saving wear and tear, as well as energy.

Significant Energy Savings

With its energy-saving features, the VS1PF drive provides significant savings over damper control. Its automatic mode adjusts output automatically based on load for optimum savings, and its manual mode lets you set the amount of savings manually.

Power Monitor



This feature displays both instantaneous and accumulated energy as they are being used by the system.

Power-Dip Ride Through Controlled Stop

This feature assures better management during instant power-off and/or power-dips. It lets you automatically program the drive to slow down the load during these conditions. The drive remains active by recovering the inertial energy in the rotating load until the load reaches zero speed.

Flux Braking

By over-fluxing the motor during deceleration, flux braking lets you stop the load quickly—thus transferring the rotational energy of the load to heat in the motor for greater efficiency.

Drive Temperature Adaptation

With this feature, the drive alters the carrier frequency when the ambient temperature increases above normal, allowing continued operation under adverse conditions.

Current Leakage Reduction Algorithm

This unique PWM algorithm reduces current flow due to parasitic capacitance in the motor leads and stator windings.

Engineered for Superior Reliability

User Friendly Keypad. Simple to Operate.

The keypad on the VS1PF drive is simple to operate, easy to program, and convenient to monitor. It features nine keys and an easy-to-read graphical display.

Easy-To-Read-Display

The backlit LCD display utilizes text-based messages to provide easy-to-read and understandable status information.

Navigation Keys

The keypad's navigation keys (MENU/ESC, SEL and directional arrows) let you navigate easily through your application setup.

Parameter Set Upload/Download

This feature allows you to duplicate your setups easily.

Keypad Enclosure

Rated NEMA 4X when mounted on a NEMA 4X panel, the keypad's enclosure is designed for remote mounting up to 100 feet away.

Easy-to-read Display

The display on our V*S performance drives is easy to read and easy to follow. All operating conditions, programming steps, and help text is printed in English, and there are no difficult codes to understand. It can also be programmed to display the information in larger type for individuals who are sight impaired.

Control Keys

Three keys on the keypad feature a light-emitting diode (LED): REV, STOP and FWD. Whenever a command is active, the LED is on. This signifies that your command has been received and is accepted. In this mode, speed is controlled with the arrow keys.

Easy Field Wiring

- Pull-apart terminal connectors
- Clearly labeled motor connection
- External DB connection accessible
- Field replaceable fan
- Optional DC link reactor connection for improved noise immunity
- NEMA 1 conduit openings (selected ratings)

Versatile Control I/O Configuration

- Eight digital inputs (Sink/Source)
- Five relay outputs (one Form-C/four Form-A)
- One analog input (+ 10V or 0 – 10V or 4 – 20mA)
- Two analog outputs (0 – 10V)
- Pulse train input (0 – 100 kHz/12V)
- NTC/PTC motor temperature sensor input
- Pull-apart terminal strips

Flexible Communication For Improved Control

Our VS1PF drives feature an RS-485 standard (built-in) port for direct control via PLC or PC using simple protocol. In addition, there are several communication option boards.

- Modbus-RTU
- Lonworks (late 2007)
- BacNet (late 2007)
- DeviceNet
- Profibus
- Modbus-TCP/IP (Ethernet) — (late 2007)