

rotork®

Fluid Systems

The Rotork VSD is a complete actuator system ideally suited for continuous duty modulating control. The robust and proven system provides unprecedented position accuracy, on-the-fly speed adjustment, a simple yet reliable hydraulic power circuit, and technician-friendly electronics to facilitate set-up and operation.

The system includes an electronic control module with a 32-bit microprocessor controller signalling a variable speed drive and an electro-hydraulic bi-directional motor-driven hydraulic pump. The pump powers a hydraulic actuator that can be rotary for quarter-turn valves or linear for globe valves and dampers. Actuators can be either double acting for "fail-in-place" control or spring-return for "fail-to-position" control.

A valve position transmitter is mounted on the actuator to measure and feedback valve position. The complete VSD control system can be self-contained on the valve or the control module can be mounted separately in a more convenient location nearby.

The VSD is designed to dissipate the heat that typically builds up in similar systems, thus improving system life expectancy. Maximum temperature rise under continuous modulating at maximum rated load is only 12 °C (10 °F) above ambient.

Operation

The VSD control module continually compares the valve position input signal to the signal from the actuator position transmitter. When the controller detects that a position correction is needed, it signals the variable speed drive to start and run the motor/pump in the proper rotation to move the actuator to the correct position.

If the position error is small, the motor/pump runs at slow speed so that the actuator moves the control valve slowly. If the position error is large, the motor/pump runs at high speed to move the actuator quickly into proper position. When the VSD actuator approaches the correct valve position the motor/pump returns to slow speed to prevent overshoot and cycling. This variable speed control provides high response rate and stable control with minimal overshoot.

The motor/pump stops when the proper valve position set point is reached. It remains stopped and does not run again until a position correction is needed. The actuator and control valve are hydraulically locked with an internal load-holding valve and remain in position until an input signal change requires valve movement.

The microprocessor configuration parameters are stored in re-writable and re-configurable EEPROM memory that maintains the configuration in case of electrical supply failure.



VSD Range

Modulating Actuators

Features

- Self-contained single-unit design
- 0.1% position accuracy
- 100% modulating duty at moderate speeds
- Fail-in-place, open, or closed
- Motor only operates when valve movement is required
- Self-locking in position
- Variable speed operation

Accessories and Options

- Expandable digital I/O, up to 40 total available
- Stepping functions for extra-long stroke times
- Manual override by integral hand pump or manual gearbox
- Additional position limit switches
- Remote and local control with remote/off/local selector and open/stop/close selector

Specifications

Control Module Location

The control module can be integrally mounted on the actuator or shipped loose for field mounting up to 300' from the actuator.

Valve Command Control Signal

The valve command analogue input signal can be either 4-20 mA or 0-10 VDC type.

Deadband

Adjustable at the PLC between 0.1% and 5% of calibrated signal span.

Positioning Accuracy

<0.5% of the position error range.

Repeatability

<0.10% of full stroke.

Alarm Output

One output relay with voltage-free contact is available for the remote signalling of a malfunction (e.g., lack of electric supply, position failure, valve command signal failure, actuator position signal failure, controller problems, etc.).

Field Setup and Commissioning

Easy setup and tuning of the system are possible using the backlit digital display and keypad. All parameters may be password protected.

Actuator Position Transmitter

The output signal from the position transmitter can be 4-20 mA or 1-5 VDC. Re-transmission of the valve position signal is an option.

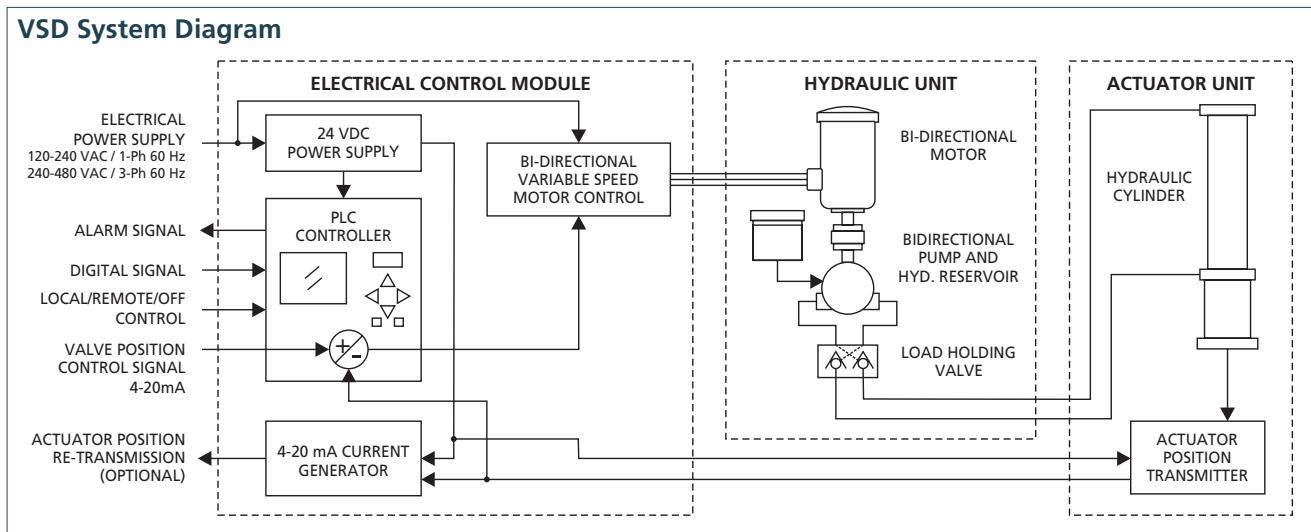
Multifunction Display

A wide range of status, alarm, input, and output signals are available on the VSD controller.

Action in Case of Failure

On loss of electrical power the standard VSD actuator will fail-in-position. Should fail-safe action to either the open or closed position be needed, spring-return rotary or linear actuators are required and are available as an option.

If electrical power is available but no command signal or valve position signal is present, one of the following actuator options may be field selected: hold position, move to open, move to closed.



A full listing of the Rotork sales and service network is available on our website.

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