

### **POWERSAV™**

### **VARIABLE SPEED PUMPING SYSTEMS PRODUCT DATA BULLETIN**

## **Technologic® 502 Series**

### **1-4 PUMP SYSTEMS, UP TO FOUR ZONES**

The Technologic 502 is a combination pump logic controller and variable frequency drive in a single enclosure capable of controlling up to three additional drives for a total of four pumps in parallel.

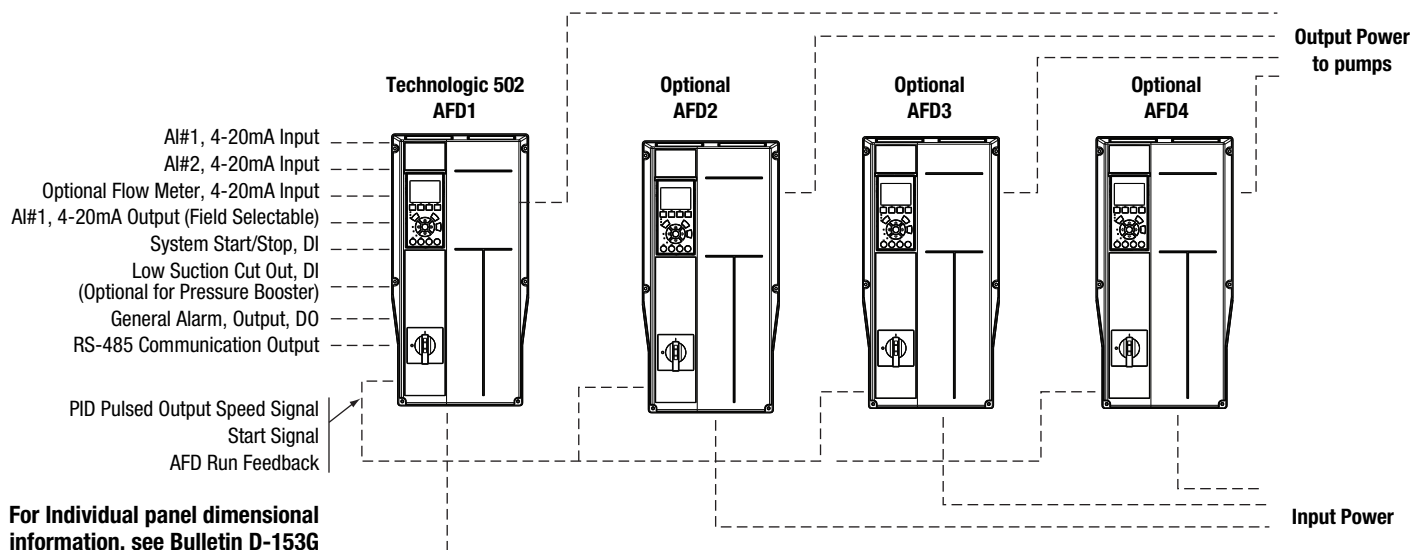
### **STANDARD FEATURES**

- NEMA 1 Enclosure
- Fused Door Interlock Disconnect
- UL and CUL Listed, CE Marked
- Local-Remote Selection
- Motor Overload Protection
- Diagnostic Display
- Manual & Automatic Pump Alternation
- Auto Start of Lag Pump upon Lead Pump Failure (for multi-pump systems)
- 4 Analog Inputs for Zone Sensors, Flow Sensor, or Suction Sensor
- End of Curve Protection
- High System Cutout
- No Flow Shutdown
- Serial Communication Compliant
- 100 kA Short Circuit Current Rating (SCCR)



### **OPTIONAL FEATURES**

- Manual Bypass
- Flow Readout
- Low Suction Cutout
- Common Backplate Mounting
- NEMA 12





## Pump Logic Controller

The Technologic pump logic controller assembly shall be listed by and bear the label of Underwriter's Laboratory, Inc. (UL) and Canadian Underwriter's Laboratory (CUL). The controller shall be specifically designed for variable speed pumping applications.

The controller shall function to a proven program that safeguards against damaging hydraulic conditions including:

- a. Pump flow surges
- b. Hunting
- c. End of curve (flow sensor required)
- d. System over pressure

The pump logic controller shall be capable of receiving up to four analog inputs from zone sensor / transmitters indicated on the plans. It will then select the analog signal that has deviated the greatest amount from its setpoint. This selected signal will be used as the command feedback input for a hydraulic stabilization function to minimize hunting. Each input signal shall be capable of maintaining a different set point value. Controller shall be capable of controlling up to four pumps in parallel.

The pump logic controller shall have a configurable analog input for a flow sensor. This input shall serve as the criteria for the end of curve protection algorithm.

The hydraulic stabilization program shall utilize a proportional-integral-derivative (PID) control function. The PID values shall be user adjustable over an infinite range.

The pump logic controller shall be self prompting. All messages shall be displayed in plain English. The operator interface shall have the following features:

- a. Multi-fault memory and recall last 10 faults and related operational data.
- b. Red fault light, Yellow warning light, and Green power on light.
- c. Soft-touch membrane keypad switches.

The display shall have four lines, with 20 characters on three lines and eight large characters on one line. Actual pump information shall be displayed indicating pump status.

Controller shall be capable of performing the following pressure booster functions:

- a. Low suction pressure cut-out to protect the pumps against operating with insufficient suction pressure.
- b. High system pressure cut-out to protect the piping system against high pressure conditions.
- c. No Flow Shut down to turn the pumps off automatically when system demand is low enough to be supplied by the hydropneumatic tank. No Flow Shutdown shall not require any external flow meters, flow switches, nor pressure switches to determine when a No Flow condition exists.

The following hardwire communication features shall be provided to the BAS:

- a. Remote system start / stop non-powered digital input
- b. Failure of any system component. Output closes to indicate alarm condition.
- c. One 4-20 mA output with selectable output of:
  1. Frequency
  2. Process Variable
  3. Output Current
  4. Output Power

The following communication features shall be provided to the Building Automation System via an RS-485 port utilizing Johnson Controls Metasys N2, Modbus RTU, or Siemens P1 protocol:

1. Individual Analog inputs
2. Individual zone setpoints
3. Individual Pump/AFD on/off status
4. System Percent speed
5. System Start/ Stop command
6. System Operation mode
7. Individual Kw signals
8. System flow, when optional flow sensor is provided

