



▲ **Surge Commander IV shown**

The OCV Surge Commanders are factory wired control panels that interface with any of the Series 118 Surge Control valves. All controllers are generally installed with minimal wiring between the surge control valve and the controller. Each controller is operated by the starting and stopping of the pump. It provides extra protection against surges associated with power failure or other pump failure by preemptively opening the valve in anticipation of the high pressure wave to follow.

## SERIES FEATURES

- ▶ Surge Commander control panel provides valve control interface
  - 12 VDC continuously charged battery backup
  - Indicator light monitors valve and panel status at all times
  - Multiple control features
    - Start up time delay - keeps valve closed during pump start to allow for pump check valves to open fully
    - Shutdown time delay – takes valve offline after pump shutdown
    - Surge time delay – determines how long the control valve stays open during down surge and/or power failure
- ▶ Two selectable operating modes
  - Mode A: Opens on power failure accompanied by a low pressure
  - Mode B: Opens on either power failure or low pressure
- ▶ Factory tested and can be pre-set to your requirements

## SURGE COMMANDER MODELS/FEATURES

FEATURE	Surge Commander III	Surge Commander IV
Front Panel Display	Yes	Yes
Valve Open Indication	Yes	Yes
Valve Status Indication-LED and Verbiage	Yes	Yes
Pressure Switch Included	Yes	Yes
Pressure Transducer (surge or sag)	No	Yes
Pressure Readout	No	Yes
Battery Failure Indicator	Yes	Yes
Input Failure Indicator	No	Yes
Enclosure Type	NEMA 4X	NEMA 4X
Enclosure Size (HXWDXD)	14" X 10.5 "X 7.5"	14" X 10.5 "X 7.5"
Controller Voltage	110-260VAC 50/60 HZ	110-260VAC 50/60 HZ

The Surge Commander IV offers several advantages not offered on other models:

- ▶ Pressure transducer for precise pressure control (surge or sag)
- ▶ Redundant surge protection
- ▶ Opens on high pressure – closes slowly when pressure returns to normal via both hydraulic pilot and electronic control

*\*Valves 1-1/4" through 24" are certified to NSF/ANSI 372. Valves 4" through 24" are also certified to NSF/ANSI 61-G.*

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## VALVE OPERATION

### NORMAL OPERATION

The control of the 118 series valve is via a two-way solenoid as controlled by the Surge Commander control panel electronics, pressure switch, and/or a pressure transducer (transducer on Surge Commander IV only). In either of the modes listed in the above Features section, energizing the normally closed, 12 VDC solenoid opens the valve. The valve remains open until the surge timer expires, at which time the solenoid is de-energized and the valve closes.

On the Surge Commander IV, the addition of the pressure transducer creates a redundant and more precise control of the valve opening on a surge or pressure down-surge (drop below static pressure).

The valve also opens when the set point of the normally closed, high pressure relief pilot is exceeded. The valve slowly closes (adjustable closing) when system pressure returns to normal. This is a hydraulic control circuit that operates independent of the electronic Surge Commander III. In the Surge Commander IV system, there is an added pressure transducer that will also open the 118 control valve when enabled.

### NORMAL START UP AND SHUTDOWN

1. Surge Commander III or IV is on STANDBY status any time no pump is running, indicated by a steady amber light and "Standby" in the display. This means that the valve will remain closed even if there is a power failure.
2. Starting a pump will begin the Start-Up Time interval (SUT), indicated by flashing the amber light, and "ARMING" in the LCD display. During this time interval the valve will not open.
3. When SUT times out, the Surge Commander III or IV, and valve, are ARMED, indicated by the green light and "ARMED" in the display.
4. The Surge Commander III or IV will remain ARMED and active until the last pump is shut down, at which time the Shut-Down Timer (SDT) is started. After the SDT has expired, the control valve will be disarmed and the Controller will return to STANDBY.

### SURGE RELIEF OPERATION

#### Surge Commander III:

##### Power Failure and/or Pressure Drop Detected:

1. Once the Surge Commander III system is ARMED:
2. The Surge Commander III and valve are ARMED, indicated by the green light and "ARMED" in the display. When there is a power failure or a down-surge (MODE B) or a power failure accompanied by a down-surge (MODE A), the valve will then open. In such a case, the Surge Commander III energizes the solenoid pilot (3), dumping the valve's diaphragm chamber to downstream, allowing the valve to open quickly and fully. At the same time, Surge Wave Timer (SWT) is energized. At the conclusion of the SWT timer, the solenoid is de-energized, allowing the main valve to slowly reclose. Note: that the re-closure occurs whether or not power is restored.

**Note: Down-Surge is detected by the pressure switch mounted to the inlet of control valve.**

##### Pressure Surge Detected:

1. The hydraulic pilot, mounted on the control valve, will open the control valve with any system pressure surge, whether the controller is armed or disarmed.

#### Surge Commander IV:

##### Power Failure and/or Pressure Drop Detected:

1. Once the Surge Commander IV system is ARMED:
2. The Surge Commander IV and valve are ARMED, indicated by the green light and "ARMED" in the display. When a power failure or down-surge\* occurs (MODE B), or a power failure is accompanied by a down-surge\* (MODE A), the valve will then open. In such a case, the Surge Commander IV energizes the solenoid pilot (3), dumping the valve's diaphragm chamber to downstream, allowing the valve to open quickly and fully. At the same time, the Surge Wave Timer (SWT) is energized. At the conclusion of its time period, the solenoid is de-energized, allowing the main valve to slowly reclose. Note: the re-closure occurs whether or not power is restored.

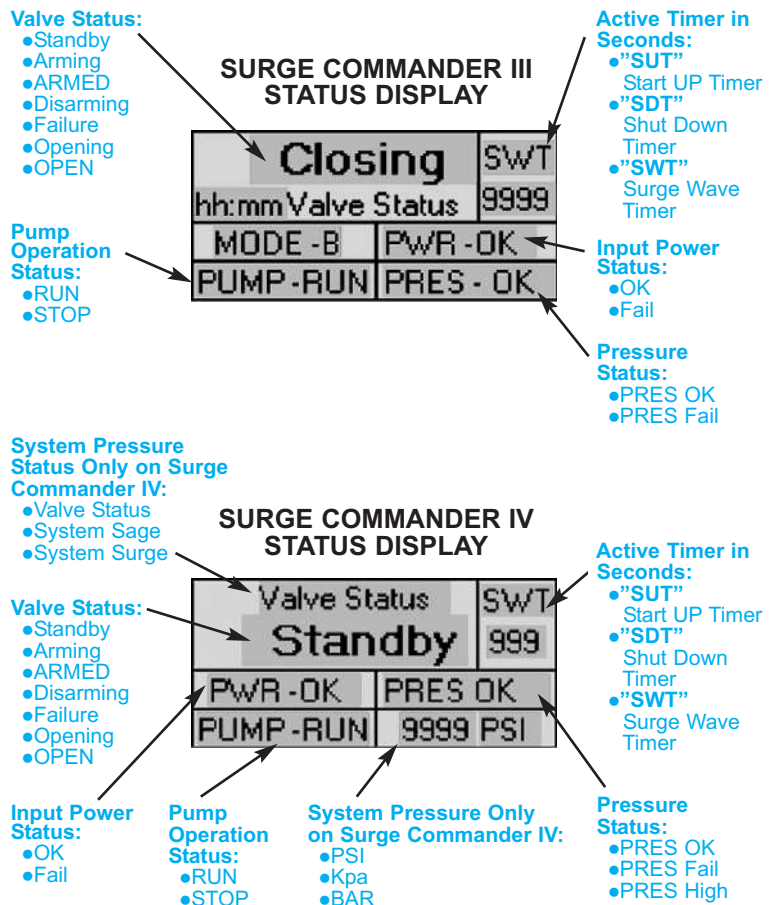
**\*Note: Down-Surge is detected by the pressure switch and/or the pressure transducer mounted to the inlet of the control valve.**

##### Pressure Surge Detected:

1. The hydraulic pilot, mounted on the control valve, will open the control valve with any system pressure surge. The Surge Commander IV uses the pressure transducer mounted on the inlet to detect a surge in system pressure, giving the end user more precise and redundant control of surge protection.

### Time Delay Setting:

Start-Up-Timer, Surge-Wave-Timer, and Shut-Down-Timer are user adjustable through the Set-up menu as described in the User's manual.



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