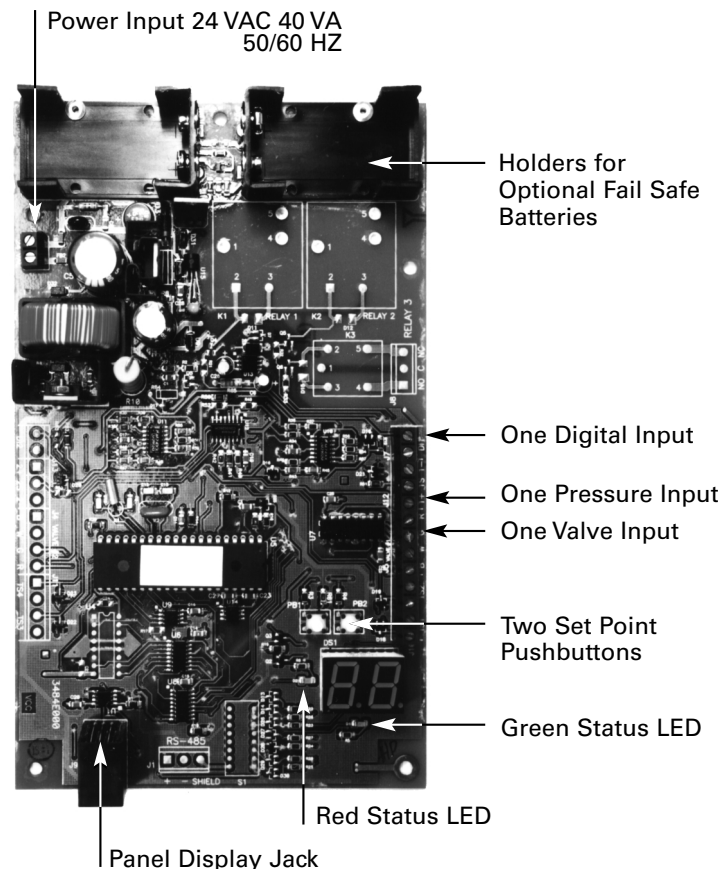


# PRESSURE CONTROLLER

The Pressure Controller was designed as a simple and economical means of controlling an Electric Hot Gas Bypass Valve or an Electric Evaporator Pressure Regulator Valve on almost any refrigeration or air conditioning system. A complete package of valve, controller and pressure transducer can be supplied by Sporlan Valve. Controllers can be ordered configured for SDR-4, SDR-3, CDS-9, CDS-16 and CDS-17. The valve type can be changed in the field by use of the optional "Panel Display". Onboard readouts show actual pressure, pressure set point, and valve position. Two push buttons are provided on the board, to change the pressure set point, as well as open, close, or position the valve.

As illustrated at right, the controller is provided with hardware and input/output connections for a number of user specified purposes. See below:

- One valve control
- One pressure input (transducer supplied by Sporlan or Customer)
- One digital input (from external switches or relays)
- Two temperature inputs (Not used with Pressure Controller)
- Optional battery backup for onboard clock and fail-safe valve closure
- Two digit LED readout
- Green & red LED status indicators
- Two push buttons for setting pressure set point, etc.
- Panel Display jack



## INSTALLATION INSTRUCTIONS

When handling the boards, electrostatic protection procedures should be followed. The person installing the controller should be grounded through a ground strap. If ground straps and other ESD protection is not available, handle the board only by the edges of the board. Another fairly safe place to hold the board is by the battery holders. DO NOT TOUCH ANY COMPONENTS ON THE BOARD EXCEPT THE BATTERY HOLDER OR RELAYS.

- 1 The board should be mounted in a dry, protected environment using the mounting holes in each corner. Make sure that none of the printed circuit paths or components are touching the metal panel or any other conductive surface.
- 2 All connections are made at the terminal block located next to push buttons PB1 and PB2.
- 3 Controllers are configured for pressure.
- 4 The pressure transducer should be mounted on the suction line where the pressure is to be controlled. The transducer connections to the board are as follows:

The power wire is red and is connected to the 1+ terminal  
The signal wire is green and is connected to the 1S terminal  
The ground wire is black and is connected the 1- terminal

- 5 DI1 is a digital input used as a pumpdown terminal. A short or closed contact from an external relay will close the valve for pumpdown. When the relay opens or the short is removed, the valve will return to normal operation.
- 6 Power is connected to the terminal marked "24VAC" located just under the battery holders. Power requirements are 24 volts AC at 40 VA. For protection from electrical transients, connect a MOV varistor between one leg of the input voltage of the 24 VAC transformer and earth ground. Connect a second MOV varistor between the other leg of the input voltage of the 24 VAC transformer and earth ground. A recommended source for a MOV is:  
Harris Semiconductor  
Part number V150LA20A for 120 VAC transformers.  
Part number V275LA20A for 208/240 VAC transformers.

## OPERATION

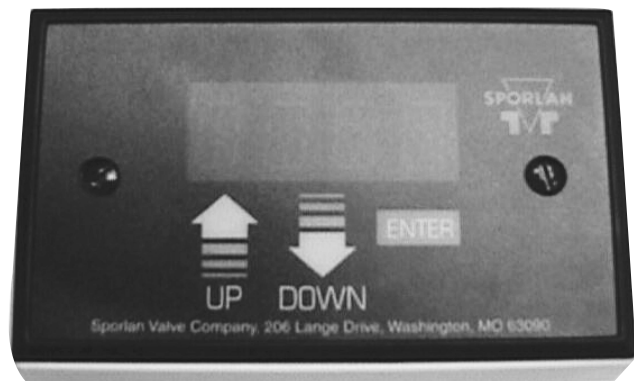
When first powered up the numeric display on the controller will show actual pressure.

- 1 The green LED will be lit
- 2 PB2 will toggle the readings as follows and the green LED will be steady or flash:
  - Actual Pressure, LED constant.
  - Valve Percentage Open, LED slow flash.
- 3 To change the pressure set point:
  - Make sure the display shows the pressure.
  - Press PB1 and PB2 simultaneously and hold for 8 seconds, LED will flash rapidly.

- Use PB1 to raise the set point.
  - Use PB2 to lower set point.
  - Press PB1 and PB2 simultaneously and hold for 5 seconds to lock in set point and return to actual pressure.
- 4 To manually change valve position, scroll to valve position reading with PB2.
    - Press PB1 and PB2 simultaneously and hold for 8 seconds, green LED will flash rapidly.
    - Increase the "valve open" percentage by pressing PB1 for 1 second.
    - Decrease the "valve open" percentage by pressing PB2 for 1 second. Valve will maintain manual open position for 1 hour or until PB1 and PB2 are pressed simultaneously, and held for 5 seconds.

## REMOTE PANEL DISPLAY

A remote panel display is available that will allow access to all the parameters that the controller uses. The Remote Panel Display can be used as a set point tool in production, a diagnostic tool in the field or as a permanent readout device on the controller. A five-foot cable is provided to connect the Remote Panel Display to the controller.



Pressing 'ENTER' will toggle display between one of the displays described above and the numeric value read for that particular display. Pressing 'UP' will scroll through the menu from 'PRES' to 'POSN', etc. Pressing 'DOWN' will scroll through the menu the opposite way.

When in 'POSN', press and hold 'UP' button and 'ENTER' button simultaneously for 5 seconds to put the controller in manual valve position. The number of steps open will be displayed and the 1000's digit will blink. Pressing the 'UP' button will open the valve 1000 steps. Pressing the 'DOWN' button will close the valve 1000 steps. Pressing the 'ENTER' button will change the flashing digit from 1000's digit to the 100's digit. Pressing the 'UP' button will open the valve 100 steps. Pressing the 'DOWN' button will close the valve 100 steps. Pressing the 'ENTER' button will change the flashing digit from 100's digit to the 10's digit. Pressing the 'UP' button will open the valve 10 steps. Pressing the 'DOWN' button will close the valve 10 steps. Pressing the 'ENTER' button will change the flashing digit from 10's digit to the 1's digit. Pressing the 'UP' button will open the valve 1 step. Pressing the 'DOWN' button will close the valve 1 step. Pressing the 'ENTER' button will change the flashing digit from 1's digit to the 1000's digit. Press and hold 'UP' button and 'ENTER' button together for 5 seconds to put the controller in normal control. The digits will stop blinking.

When in 'PRSP', pressing and hold 'UP' button and 'ENTER' button for 5 seconds will enable the "suction pressure set point" to be changed. The set point is displayed and the 100's digit will blink. Pressing the 'UP' button will increase the set point by 100 PSI. Pressing the 'DOWN' button will decrease the set point by 100 PSI. Pressing the 'ENTER' button will change the flashing digit from 100's digit to the 10's digit. Pressing the 'UP' button will increase the set point by 10 PSI. Pressing the 'DOWN' button will decrease the set point by 10 PSI. Pressing the 'ENTER' button will change the flashing

digit from 10's digit to the 1's digit. Pressing the 'UP' button will increase the set point by 1 PSI. Pressing the 'DOWN' button will decrease the set point by 1 PSI. Pressing the 'ENTER' button will change the flashing digit from 1's digit to the 100's digit. Press and hold 'UP' button and 'ENTER' button for 5 seconds will save the set point. The digits will stop blinking.

When in 'CALP', the numeric display shows the PSI to be either added or subtracted from that particular sensor, depending if the reading is negative or positive. Pressing and holding 'UP' button and 'ENTER' button for 5 seconds will enable that sensor to be calibrated. The CAL number is displayed and the 10's digit will blink. Pressing the 'UP' button will increase the CAL number by 10 PSI. Pressing the 'DOWN' button will decrease the CAL number by 10 PSI. Pressing the 'ENTER' button will change the flashing digit from 10's digit to the 1's digit. Pressing the 'UP' button will increase the CAL number by 1 PSI. Pressing the 'DOWN' button will decrease the CAL number by 1 PSI. Pressing the 'ENTER' button will change the flashing digit from 1's digit to the 0.1's digit. Pressing the 'UP' button will increase the CAL number by 0.2 PSI. Pressing the 'DOWN' button will decrease the CAL number by 0.2 PSI. Pressing the 'ENTER' button will change the flashing digit from 0.1's digit to the 10's digit. Press and hold 'UP' button and 'ENTER' button for 5 seconds will save the CAL number. The digits will stop blinking.

If display reads 'SDR3', 'SDR4', 'CDS9' or 'CD16', pressing and holding 'UP' button and 'ENTER' button for 5 seconds will enable the controller to change to the other type of valve. All 4 digits will start to blink. Pressing either the 'UP' button or the 'DOWN' button will scroll the display through the valve options. Press and hold 'UP' button and 'ENTER' button together for 5 seconds to save the selection. The digits will stop blinking.

REMOTE PANEL DISPLAY	
Plug the remote display into the telephone jack (J9) on the controller. The following is a list of readings available:	
PRES	Pressure read by the transducer (0-153 psi absolute or gauge)
POSN	Number of steps the electric expansion valve is open (0-1596, OR 0-6386)
ACON, PMDN	ACON when in normal operation, PMDN when in pumpdown
SDR3, SDR4, CDS9, CD16	SDR3 if the valve being used is a SDR-3 SDR4 if the valve being used is a SDR-4 CDS9 if the valve being used is a CDS-9 CD16 if the valve being used is a CDS-16 or CDS-17
PRSP	Pressure set point (0-153 PSI absolute or gauge) Default is 60 PSI
CALP	Calibrate pressure transducer