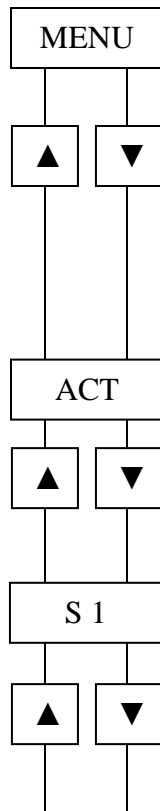


## UDS7-BX Supplemental Programming Instructions



The entire programming of the UDS7-BX Electronic Pressure Switch can be done using three buttons on the face of the unit. The M is Menu. The Up and Down arrows are used to scroll through the possible menu selections. This manual guides the user in programming this unit.

Connect the unit to power before beginning.

If the unit is locked, “LOH” will appear when trying to change any settings. Press and hold both arrow keys at the same time for approximately 5 seconds. This will unlock unit and allow for settings to be changed. Repeat to toggle back into a locked state.

### Read Actual Measured Value:

The ACT menu is available to read the actual value regardless of what parameter has been selected above. From the Menu, scroll down to ACT, and press M. The actual pressure will be displayed. To exit this mode, press M again.

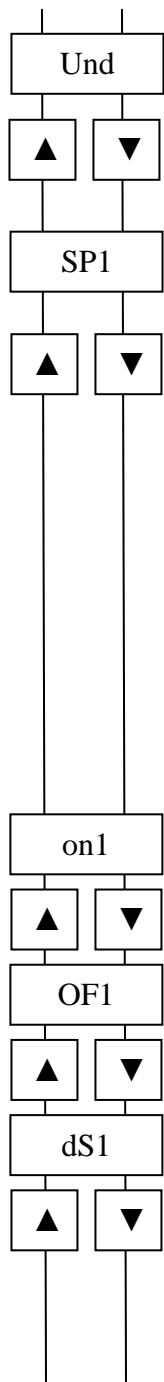
### Selecting the Units of measure for the above displayed value:

There are five choices of units:

- “PSI” – Pounds per square inch (psi)
- “PSH” – PSI/10 (Use for high pressures since the display has a max of 3 characters)
- “bar” – BAR
- “nbar” – Millibar
- “hPo” – Hectopascal
- “nPo” – Millipascal

To select the units, Press “M” to access menu. Using the down arrow, scroll to “S 1”. Press “M” to select programming units. Using arrows, scroll thru selections above. When you see the selection you want, press “M”. For example, to display the value in PSI, scroll to “PSI” and press “M”. To exit programming, use the arrows to scroll back up to “MENU” and press “M”.

**NOTE:** Changing the units of measure does not change the set point values. Therefore, the user must convert each set point and reprogram the UDS7-BX when units of measure are changed.



**Selecting the Units of measure for the above displayed value:**

This menu option allows the user to turn on/off the display of the unit of measure. Selecting “on” will set the unit to display the unit of measure every 30 s. Selecting “off” will turn off the display.

**Setting Switch Point 1:**

**Standard mode programming:**

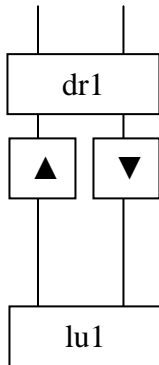
Here we will discuss the two most common settings for the switch points: STANDARD and WINDOW modes. The “Std” or standard mode mimics the operation of a mechanical switch. For example, the user can specify ON at 500 psi increasing pressure, and OFF at 400 psi decreasing pressure. The switch state (ON or OFF) within the range of 400-500 psi will depend on whether the pressure is increasing or decreasing, as it does in a typical mechanical switch. In window mode “uln”, the user specifies a range and a switch state within the range. For example, the user can specify ON at 400 psi pressure, and OFF at 500 psi pressure. The switch state within the range of 400-500 psi will be the same regardless of whether the pressure is increasing or decreasing.

The user can also use this menu to set a delay for the switch-on point “dS1” and for the switch-off point “dr1”. For example, in a system where the pressure changes rapidly, the user may choose to introduce a delay of anywhere from 0 to 9.9 seconds. (Zero would imply no delay). This menu also allows inversion “lu1” of the switch state. The switch will change from normally open to normally closed or from normally closed to normally open. The S1 and S2 LEDs allow the user to see when the switch points are “ON” and “OFF” for ease of programming and test.

The following example sets switch 1 to turn ON at 500 psi increasing pressure and OFF at 400 psi decreasing pressure:

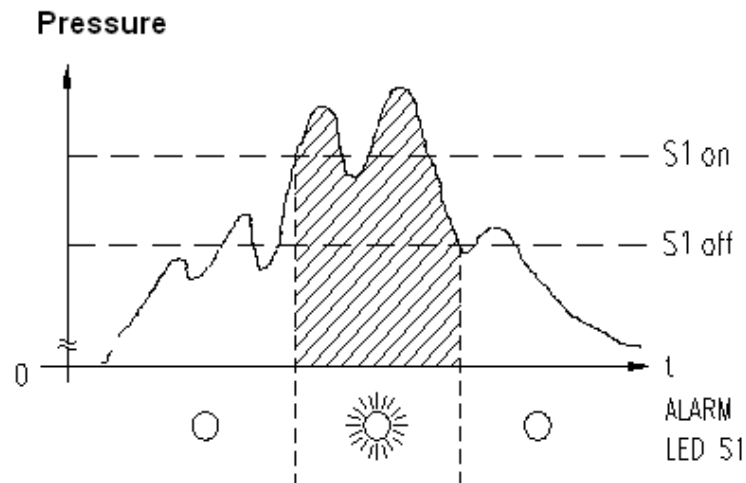
Press “M” for menu. Using the down arrow, scroll to “SP1”. Press “M” to enter the menu for Switch Point 1. Using the down arrow, scroll to “Std”. Press “M” to select the standard setting of the switch. Using the down arrow, scroll to “on1”. Press “M” to enter the menu for setting the switch ON point. Set the switch ON point to 500 psi by using the arrows to change digits, and the “M” to move from one digit to the next. Once done, the “M” will take the user back to the menu with “on1”. Press the down arrow to go to the next option, “OF1”. Press “M” to enter the menu for setting the switch OFF point. Set the switch OFF point to 400 psi by using the arrows to change digits, and the “M” to move from one digit to the next. Once done, the “M” will take the user back to the menu with “OF1”. Press the down arrow to go to the next option, “dS1”. Press “M” to

enter the menu for setting the switch-on delay. Set the desired delay between 0.0 seconds and 9.9 seconds using the arrows to change digits, and the “M” to move from one digit to the next. Once done, the “M” will take the user back to the menu with



the “**ds1**”. Press the down arrow to go to the next option, “**dr1**”. Press “M” to enter the menu for setting the switch-off delay. Set the desired delay between 0.0 seconds and 9.9 seconds using the arrows to change digits, and the “M” to move from one digit to the next. Once done, the “M” will take the user back to the menu with the “**dr1**”. Press the down arrow to go to “**lu1**”. Press the “M” to enter the inversion menu to set the fail safe mode. Using the down arrow, the user can toggle between HFS (high fail safe or normally open) and LFS (low fail safe or normally closed). Scroll to “HFS” and press “M” to select high fail safe. You are done programming switch point 1. To exit the programming mode, use the up arrow to scroll back to “MENU” and press “M”.

To test, use a test bench to apply pressure to the switch. Gradually increase pressure to 500 psi. The LED for “S1” will light up when 500 psi pressure is reached, indicating the switch point is on. Gradually decrease pressure applied to the switch. The LED will turn off at 400 psi. See graphical representation below where S1on is 500 psi and S1off is 400 psi.



To change to normally closed mode, use the above directions to set the “**lu1**” to “LFS”. This option will have the S1 LED light up opposite to the above diagram.

To change the program to switch on at decreasing pressure, the high and low should be switched between the ON and OFF.

Use the directions above, and set the following parameters:

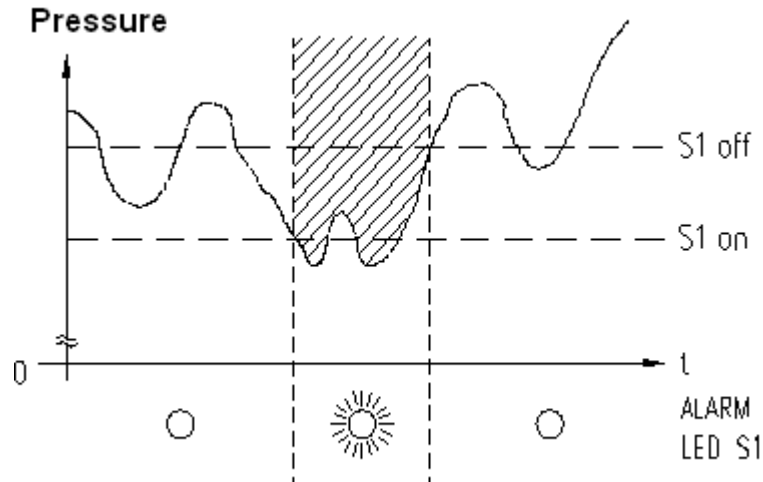
“SP1” = std

“on1” = 400

“OF1” = 500

“lu1” = HFS

As shown in the diagram below, this setting will turn on S1 as pressure drops below 400 psi (“S1on”). The S1 will turn off when pressure is above 500 psi (“S1off”). Again, to reverse the normally open function, change the inversion selection to LFS, and the LED will turn off at 400 and back on at 500 psi.



### **Setting Switch Point 1:**

#### **Window mode programming:**

The above was a detailed explanation of the standard mode setting. The UDS7-BX unit is also capable of window mode programming. Window mode allows the user to monitor either within a range or outside of a range of pressure. For example, the user can have the switch ON between any two pressures, or outside of any two pressures.

Using the instructions above, set the following parameters:

“SP1” = uln

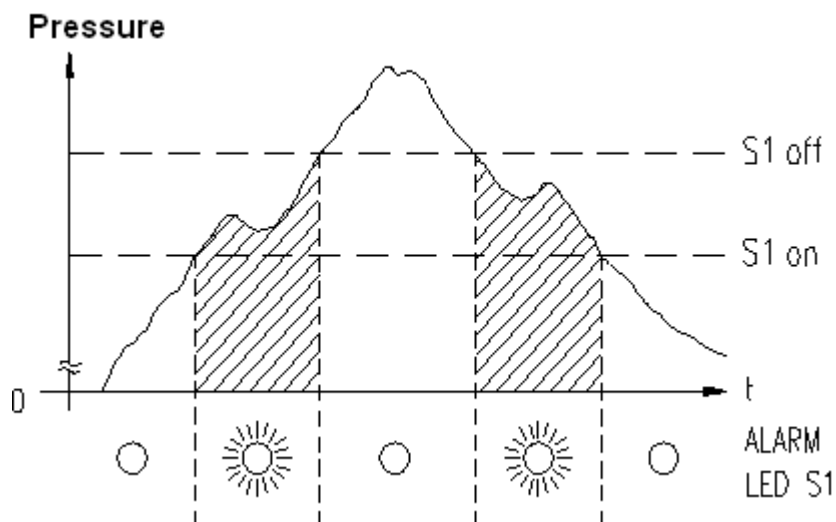
“on1” = 500

“OF1” = 400

“lu1” = HFS

Note that reversing the on1 and OF1 will reverse the state of the switch to OFF between the set points and ON outside of them. For simplicity of understanding, it is suggested that the high limit be used for “on1” and the low limit be used for “OF1”.

In the above configuration, the S1 LED will light up between 400 and 500 psi, and be off outside of that range, as indicated in the diagram below:



To monitor when the system is outside of the ON1 and OFF1 window, set the following parameters:

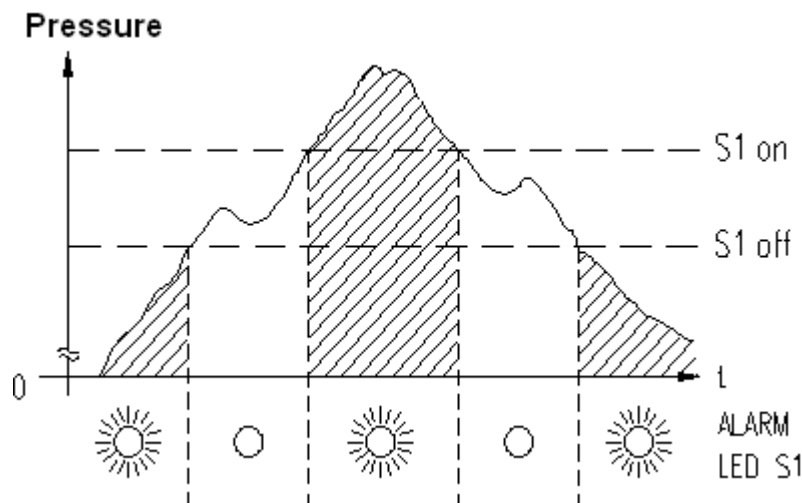
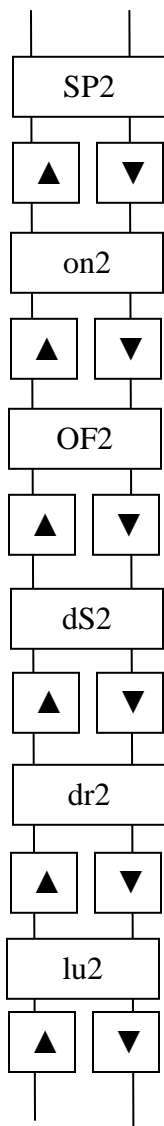
“SP1” = uln

“on1” = 500

“OF1” = 400

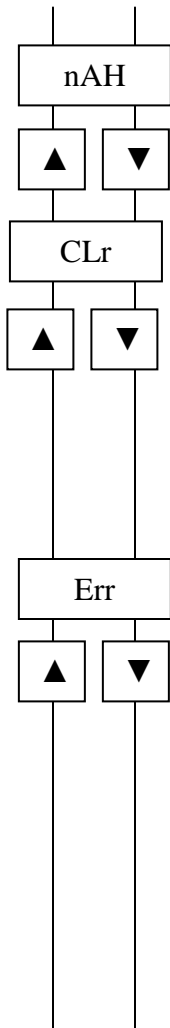
“lu1” = LFS

As shown in the diagram below, the above configuration will illuminate the S1 LED at any pressure outside of the 400 to 500 psi range.



**Setting Switch Point 2:**

The function and programming of the second switch point SP2, is identical to SP1. The parameters for switch point 2 are SP2, on2, OF2, dS2, dr2, and lu2. Since they are identical to switch point 1 in both function and programming, please refer to “Setting Switch Point 1” for instructions.



**Displaying and deleting Max and Min values:**

The next functions we discuss give the user actual recorded values of system pressure. The UDS7-BX “remembers” the maximum value of actual pressure that it reads. This is often referred to as “watchdog.” To access, follow these steps:

To know the maximum pressure the system has reached, press “M” to access the programming menu. Using the down arrow, scroll down to “nAH”. Press “M” to select accessing the max value. The value displayed is the maximum actual pressure read by the UDS7-BX. Press “M” again to exit the reading, and use the arrows to get to “MENU” and press “M” to exit the programming menu.

The maximum pressures can be cleared from the UDS7-BX memory to enable monitoring of a NEW high in the system. To clear the high pressure reading, access the menu, and scroll down to “CLr”. Press “M” to access the clear high function. Scroll down to “YES” and press “M” to clear the high pressure reading.

**Trouble shooting:**

Use the “Err” menu option to perform an error check. When “Err” is displayed, press “M” to display any errors. The code displayed reveals the error type.

Error messages:

- 0H no error
- nAH Pressure is exceeding maximum measuring range
- nln Pressure is below minimum measuring range
- Sen Sensor error
- SP1 Switching output 1 error
- SP2 Switching output 2 error
- dAt Data error (EEProm)
- PrC Program error
- CAL Calibration error
- ono Error Analog out