FLUIGENT P-SWITCH Valve Controller User Manual

Contents

FLUIGENT P-SWITCH Valve Controller

Product Information

Specifications

- **Product Name:** LineUp P-SWITCH
- **Number of Inlets:** 2 (P1 inlet, P2 inlet)
- **Number of Outlets:** 8
- **Pressure Range:** -800 mbar to 2000 mbar

Product Usage Instructions

- Power ON the module using the LineUp Supply Kit and/or LINK module. The P-SWITCH LEDs will turn orange, indicating the default dispense pressure is set on P1.
- The LineUp P-SWITCH requires a pressure or vacuum supply. Each inlet can be supplied with a positive pressure up to 2000 mbar or a vacuum down to -800 mbar. If an inlet remains unsupplied, atmospheric pressure will be dispensed through it. P-CAP and
- Fluiwell reservoirs can be pressurized with the P-switch via the included adapter.
- The LineUp P-SWITCH can be configured with other LineUp modules such as Push-Pull or Flow EZ to provide regulated pressure or vacuum. Connect their outlets to the P-SWITCH inlets based on the desired configuration.

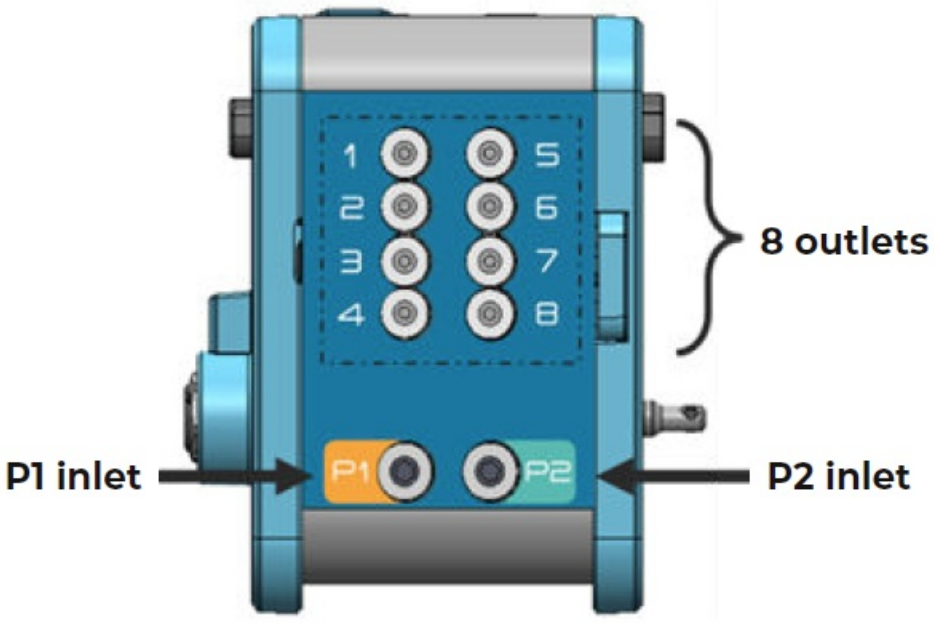
- To switch any valve position from P1 to P2 or vice versa, press the corresponding button of the valve. The LED will change color to indicate the new current position. Multiple valves can be actuated simultaneously. The P1 to P2 button allows setting every valve at the same time to the same position.
- Ensure the P-SWITCH is stacked to a LINK connected to the computer for local control. Fluigent's software enables the automation of protocols and programming sequences of pressure steps. A cable is provided with the LINK for connection to a PC.

FAQ

- **Q:** Can I use the LineUp P-SWITCH without connecting it to a computer?
- **A:** Yes, you can use the P-SWITCH locally without a computer by following the manual control instructions. However, for advanced automation and programming, connecting it to a computer via the provided cable and using Fluigent's software is recommended.

USER'S MANUAL

- Aria is a perfusion system that automates perfusion or timed injection protocols. It allows for the sequential delivery of up to 10 different solutions at the desired flow rate into a microfluidic chip, perfusion chamber or petri dish.
- The P-SWITCH is a LineUpTM module containing eight 3-port / 2-position solenoid valves. It can be used to actuate pneumatic or quake valves and to deliver different pressures or vacuum. It can be used to pressurize up to 8 reservoirs per module.

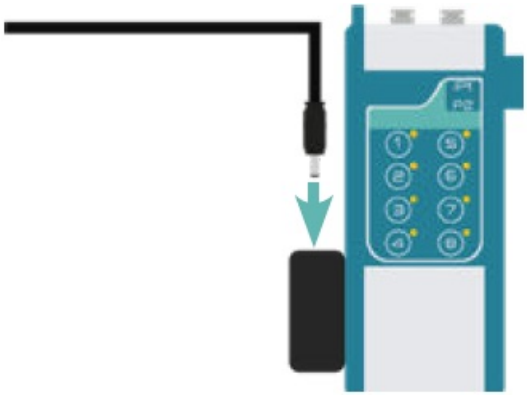


- The LineUp P-SWITCHTM allows one to switch 8 pressure outlets between two different supplied pressures P1 and P2.
- Those pressures are common to all the valves and can be dispensed within the range of -800 mbar to 2000 mbar.

MANUAL CONTROL

Power ON

- Power ON the module using the LineUp Supply Kit and/or LINK module. Once done, the P-SWITCH leds will turn orange, the default dispense pressure is set on P1.



Pressure supply

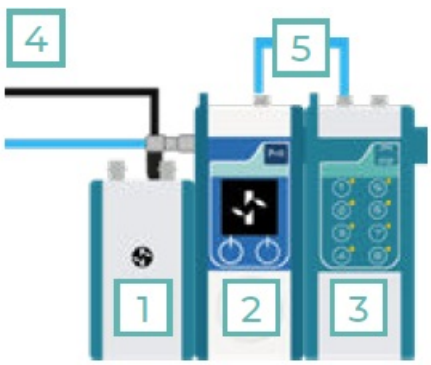
- The LineUpTM P-SWITCH requires a pressure or vacuum supply to be used. Each inlet can be supplied with a positive pressure up to 2000 mbar, a vacuum down to -800 mbar.
- **Note:** If an inlet remains unsupplied, the atmospheric pressure will be dispensed through this one.
- P-CAP and Fluiwell reservoirs can be pressurized with the P-switch via the adapter (3 to 4 mm) (x8) included in the kit.

The LineUp P-SWITCHTM is designed to work with other LineUp modules such as Push-Pull or Flow EZTM to provide regulated pressure or vacuum. Supply the pressure controllers and connect their outlets to the P-SWITCH inlets.

Configurations

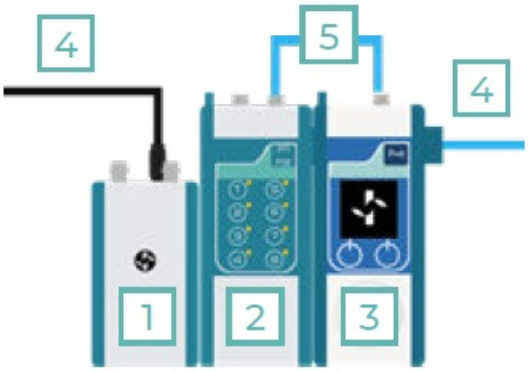
1. INK module
2. Flow EZTM / Push-Pull
3. P-SWITCH
4. LineUp Supply Kit to the compressor
5. Supply P1 inlet from Flow EZ / Push-Pull

In the configuration above, the LineUp P-SWITCHTM allows one to switch between the P1 regulated pressure supplied by the Flow EZTM or Push-Pull and the P2 atmospheric pressure.



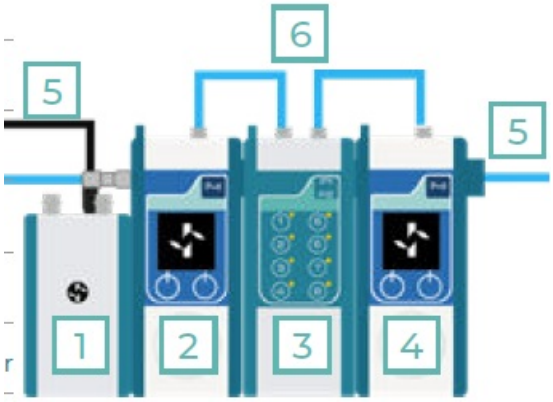
1. LINK module
2. P-SWITCH
3. Negative Flow EZTM / Push-Pull
4. LineUp Supply Kit to vacuum pump
5. Supply P2 inlet from Flow EZ neg / Push-Pull

In the configuration above, the LineUp P-SWITCHTM allows one to switch between the P2 vacuum supplied by the negative Flow EZTM or Push-Pull and the P1 atmospheric pressure.

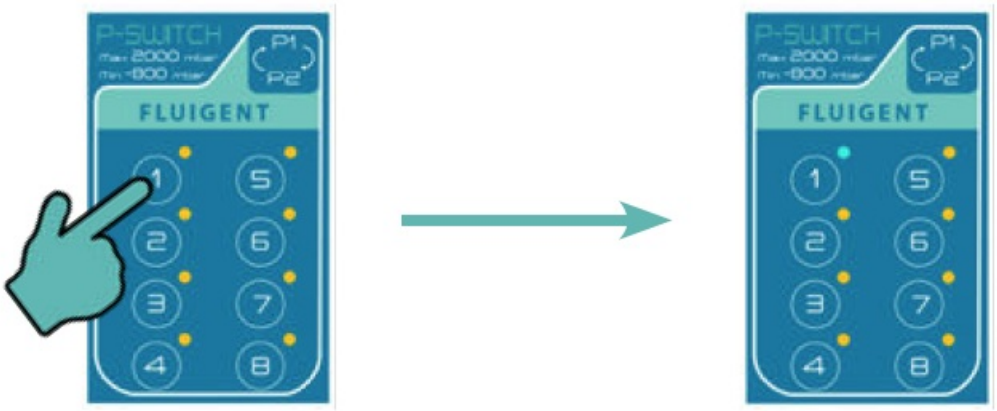


1. LINK module
2. Flow EZTM / Push-Pull
3. P-SWITCH
4. Negative Flow EZTM / Push-Pull
5. LineUp Supply Kit to the requested compressor
6. Supply P1 and P2 from Flow EZ / Push-Pull

In the configuration above, the LineUp P-SWITCHTM allows one to switch between the P1 regulated pressure or the P2 vacuum both supplied by each Flow EZTM or Push-Pull.

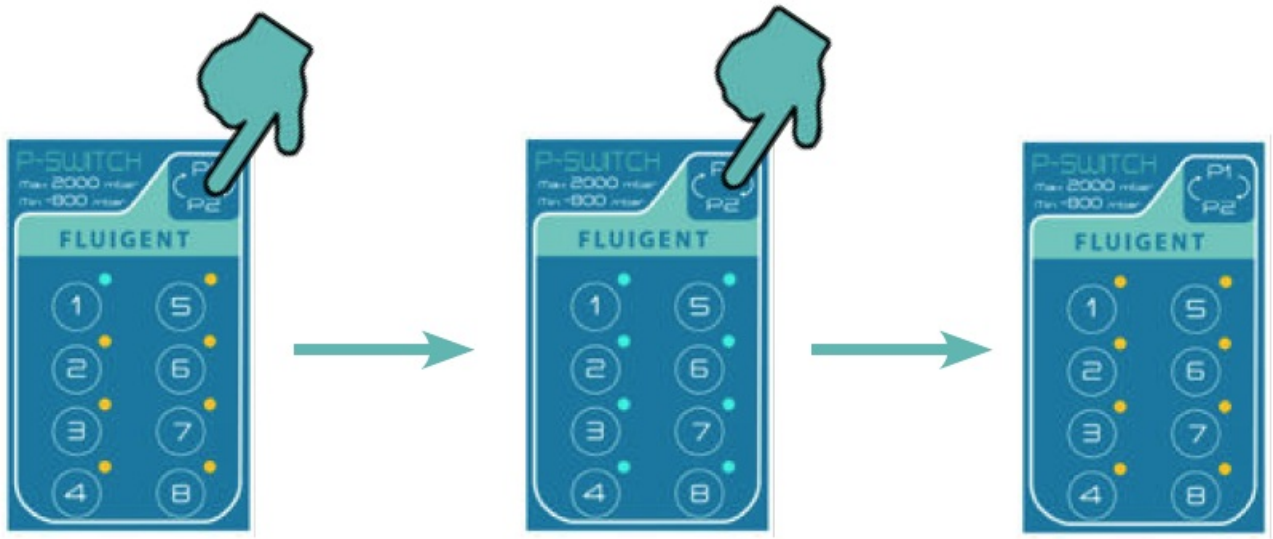


Switching valve position



To switch any valve position from P1 to P2 or P2 to P1, press the corresponding button of the valve. Once done, the led will change colour to either in orange or in blue to indicate the new current position.
Note: Several valves can be actuated at the same time.

P1 to P2 button



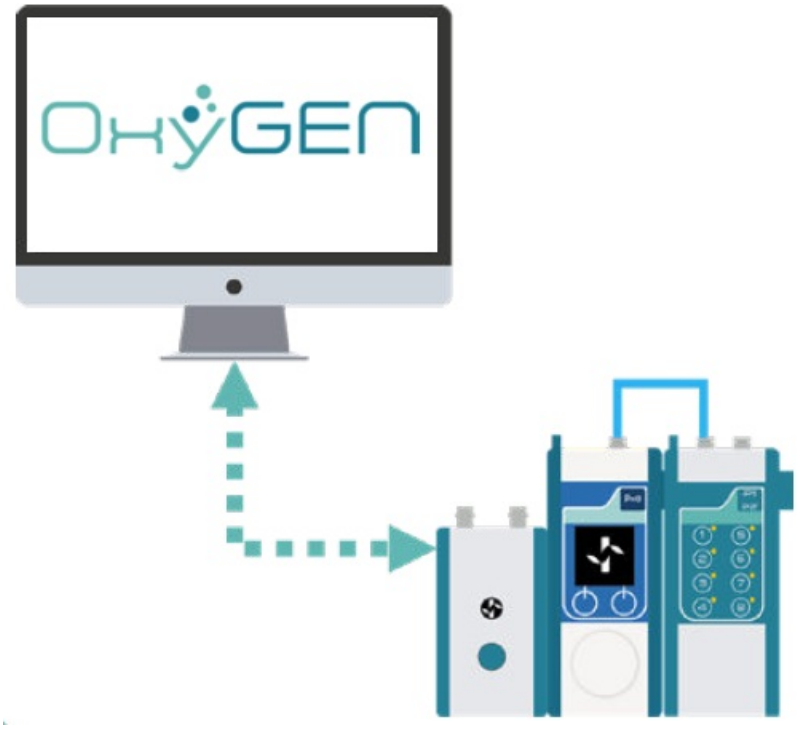
- By pressing the “P1 <-> P2” button, one can set every valve at the same time to the same position. By pressing it again, one can set every valve on the second position. (LEDs colour indicates the supplied pressure)

COMPUTER FIRST ENSURE

- First of all, ensure the P-SWITCH is stacked to a LINK connected to the computer.
- In addition to the local control, Fluigent newest software allows one to automate any protocol and easily program sequences of pressure steps.

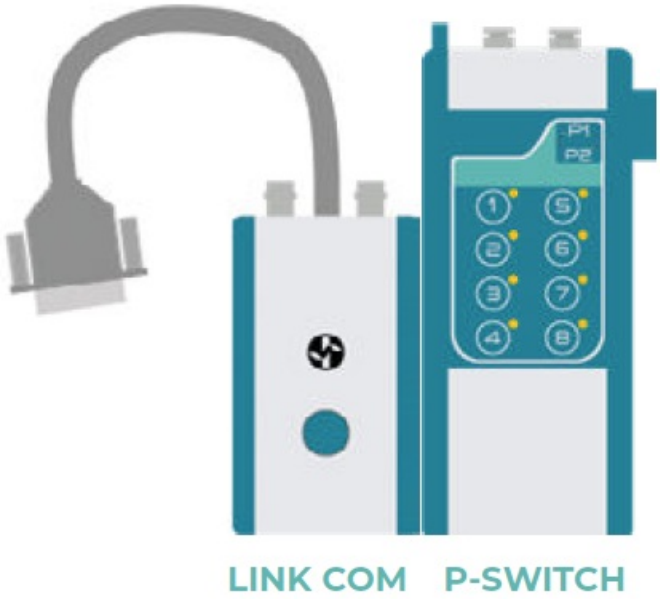
Note: A cable is provided with the LINK to enable connection to the PC.

To be compatible with the LineUpTM P-SWITCH, the LINK module version needs to be at least ver 1.06



REMOTE OPERATION

- The following part details the serial RS-232 communication information for the use of the LineUp™ P-SWITCH with the LINK COM.
- The RS-232 interface is a 9-pin D-Sub socket used for remote communication The voltage level is +10 V (pin 5: CND; pin 2: RX +-10V; pin 3: TX + – 10V).



Serial communication parameters should be set as follows

- Baud Rate 115 200 bps
- Stop Bits 1
- Parity No parity
- Flow control None

This remote command set is the default set available on the instrument. All commands must be terminated with a <CR>. All decimal values use the point “.” as a decimal separator.

- A query command ends with a question mark “?” for queries. The data column represents the response of the instrument. All response strings are terminated with a <CR>. Any response that has multiple parameters returns the parameters separated by commas “,”.
- For all commands (no question mark “?”), the data column represents the required parameters to be sent to the instrument following the string in the command column. Any command that requires multiple parameters must have the parameters separated by commas “,”. In case of error in the command’s spelling, the command is ignored by the instrument without the error code returned.
- Queries related to an instrument connected at index “X” return “ERROR NO MODULE” in case there is no instrument at the index they refer to or the instrument at the index is not compatible with the query (e.g a query for a Flow EZTM will not work if there is a P-SWITCH at the index poled).

The following table describes the P-SWITCH remote command set:

Query	Data	Function / Response
SWEZ		
:X:READ:Y?	<pos>	Gives the state of the 8 valves of the P-Switch at index X on 8 bits, displayed as 2 hexadecimal code. Valve ON : position bit is 1 Valve OFF : position bit is 0. Examples : 00 : all valves are OFF 01 : only valve 1 is ON FF : all valves are ON F0 : only valves 5 to 8 are ON
:X:SET:<mask>:<value>		<mask> : ZZ (hexadecimal code, from 00 to FF). Sets the valve that will be allowed to be controlled 0 leaves the valve as is, 1 makes it switch to the corresponding bit of <value>. <value> : YY (hexadecimal code, from 00 to FF) Sets the valve to the value of the bit. 0 : valve OFF, 1 : valve ON.
:X:INVERT:<mask>		Inverts the state of the valves selected by the mask. <mask> : ZZ (hexadecimal code from 00 to FF). Sets the valves to invert. 1 will invert the valve, 0 will leave it as is.

Example of remote commands : PSWI:1:SET:F0:80: Forces the valves 5 to 7 to OFF state, valve 8 to ON state, and valves 1 to 4 unchanged on the P-Switch at index 1. (Note: F0 = 1111 0000 and 80 = 1000 0000 in binary). If the state was 0101 0101 (55) after this command it is now 1000 0101 (85)

Documents / Resources

	**FLUIGENT P-SWITCH Valve Controller** [pdf] User Manual P-SWITCH Valve Controller, P-SWITCH, Valve Controller, Controller

References

- **User Manual**