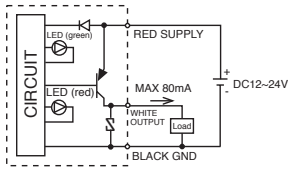
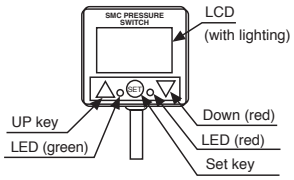
Pressure/Vacuum Switch

Operating instructions for RS Digital Pressure and Vacuum Switches

1.Output circuit wiring



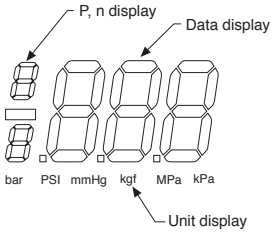
2. Parts description



Set key : Change the input mode
UP key : Increase the setting valve
DOWN key : Decrease the setting valve
: change display unit
: change output mode

To reset press UP and DOWN key simultaneously

3. Setting method



a) Unit and output mode setting

- Push set key for approx 1 sec.
- Unit display will flash
- Push DOWN ▼ key to change units
- Push SET key
- 'P' or 'n' will be displayed
- Push DOWN key ▼ to switch between 'P' and 'n'
- Push SET key

Note: See section b for details of 'P' and 'n' selection.

b) Data setting

Example 1

Hysteresis mode P1 (n1) > P2 (n2), e.g. detection of applied pressure greater than 0.50 PMPa. Hysteresis = 0.05 MPa.

a) Positive output

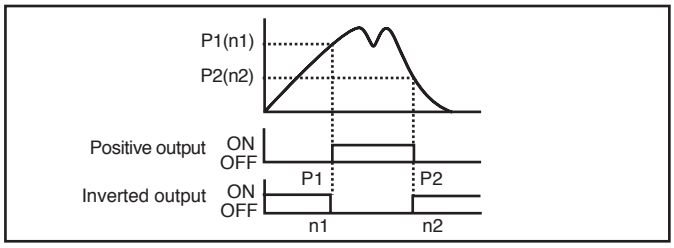
- Set output mode to 'P'
- Push SET key
- Set P1 = 0.5 MPa
- Push SET key
- Set P2 = 0.45 MPa
- Push SET key

b) Inverted output

- Set output mode to 'n'

Follow steps 2-6 as for Positive output.

Note: P1 and P2 are now n1 and n2 in this mode.



Example 2

Window comparator mode [(P2 (n2) > P1 (n1)], e.g. detection of pressure greater than or equal to 0.30 MPa and les than or equal to 0.7 MPa.

a) Positive output

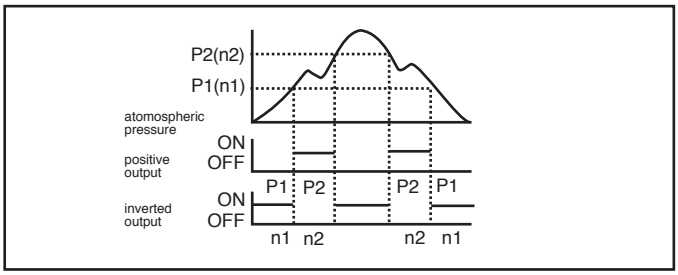
- Set output mode to P
- Push SET key
- Set P1 = 0.30 MPa
- Push SET key
- Set P2 = 0.70 MPa
- Push SET key

b) Inverted output

- Set output mode to 'n'

Follow steps 2-6 as for positive output.

Note: P1 and P2 are now n1 and n2 in this mode.



4. Additional features

a) Peak pressure display mode

- Push the UP key ▲ to display peak pressure. (In this mode'H' will appear on the display)
- Push the UP key ▲ again to return to current pressure

b) Minimum pressure display mode

- Push down key ▼ to display minimum pressure. (In this mode 'L' will appear on the display)
- Push down key ▼ again to return to current pressure

c) Resetting

- To reset push the UP and DOWN keys ▲ ▼ simultaneously
- In normal operation, restting will clear the peak indicators and rest the zero point
- In the case of an output errror, the set data is held when the power supply is applied (system reset is operated)
- In the case of a data error the display changes to the setting mode

Note: The reset function will not operate in the setting mode.

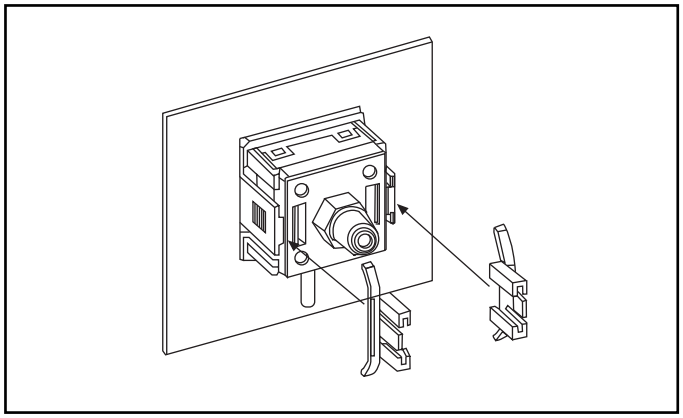
5. Errors

Display	Reason for error	Correction
E1 dE (data error)	Setting data has been corrupted	Reset the switch and set the data again
E2 CE1 (current overload error)	Switch output is short-circuit giving current overload	Turn off the power supply and connect the load between the output (white wire) and ground
E3 PE (overpressure error)	Vacuum: More than 0.5 MPa has been applied Positive pressure: 1.5 x rated pressure has been applied	Set the pressure switch to less than rated pressure
E4 HP (zero point adjustment error)	Pressure is applied to the switch during zero point adjustment	Adjust zero point by resetting the switch point whilst no pressure is applied to the switch

6. Handling

- Handle the switch by its body not the cord
- Use a 12mm spanner on the hexagon nut on the back of the switch. Use no tools on any part of the plastic body
- Do not use the switch with corrosive gas
- The switch will be affected by noise if wired into a high voltage or motor power line
- The switch is not waterproof

7. Panel mounting



The adapter for panel mounting must be fitted to the switch body before the switch is mounted on the panel.

Pressure unit conversion chart

	bar	kgf/cm^2	mmHg	PSI	Pa
bar	1	1.020	750.062	14.50	0.1M
kgf/cm^2	0.981	1	735.559	14.217	0.098M
mmHg	1.333×10^{3}	1.359×10^{-3}	1	1.933×10^{-2}	0.133k
PSI	0.069	0.070	51.715	1	6.89k
Pa	10^{-5}	1.019×10^{-5}	7.501×10^{-3}	1.45×10^{-4}	1

Technical specification

Vacuum models

NPN output -**RS** stock no. _____216-4746
PNP output - **RS** stock no. _____216-4768
Analogue output - RS stock no. _____216-4752
Operating pressure range _____+10 to -101 kPa
(+75 to -760 mmHg)
Maximum pressure _____+2 bar (200kPa)
Min. displayed unit _____mmHg:5
PSI:0.1
bar:0.01
kPa:1
Switch indicator _____ON (green light)
Response frequency _____200Hz (5ms)
(not analogue output model)
Differential (note 1) _____min 3 units of display
(not analogue output model)

Pressure models

NPN output - **RS** stock no. _____216-4718
PNP output - **RS** stock no. _____216-4730
Analogue output - **RS** stock no. _____216-4724
Operating pressure range _____-1 to 10 bar
Maximum pressure _____10 bar (1-0MPa)
Min. displayed unit_____kgf/cm^2
PSI:1
bar:0.1
MPa:0-01
Switch indicator _____ON (green light)
Response frequency _____200Hz (5ms)
(not analogued output model)
Differential (note 1) _____min 3 units of display
(not analogue output model)

Both models

Fluid _____Air, inert gas
Temp characteristics _____±3% F.S.
Repeatable accuracy_____±1%
Power supply _____12-24V d.c. (≤ ripple 10%)
Current _____45mA
Error display _____RED LED + display error code on LCD
Opration temp range _____0-50°C
Noise resistance _____1000V p-p pulse width 1 micro standing 1rs
Insulation strength _____1000V a.c. 50/60 Hz (1 mj)
Insulation resistance_____2 MΩ (500V d.c. by megger)
Vibration resistance_____10-500 Hz width = 1.5 mm or acceleration 10 G to X,Y, Z direction (2 hours)
Shock resistance_____100 G, X, Y, Z
Weight_____45g
Port size _____R (PT) 1/8, M5 x 0.8 male and M5 x 0.8 female