Digital Pressure Sensor with Solenoid Valve Control (M P S - 10A Series)
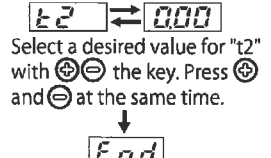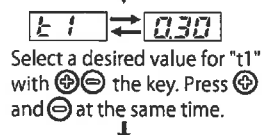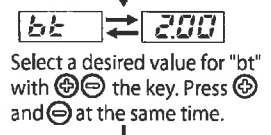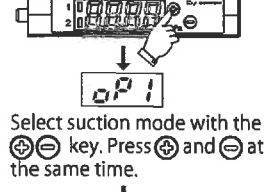## Instruction Manual

1. Suction mode and timer setting

Press the ⊕ key once and wait for 3 seconds after having release it.

Select suction mode with the ⊕⊝ key. Press ⊕ and ⊝ at the same time.

$bt \rightleftarrows 2.00$

Select a desired value for "bt" with ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$t1 \rightleftarrows 0.30$

Select a desired value for "t1" with ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$t2 \rightleftarrows 0.00$

Select a desired value for "t2" with ⊕⊝ the key. Press ⊕ and ⊝ at the same time.
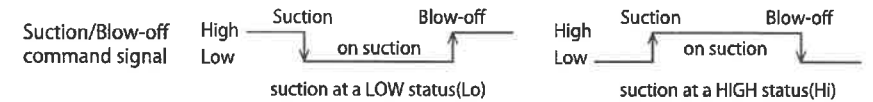
End

「Suction mode」
- oP1 : Suction mode 1 (ON by timer; suction maintained by the timer)
- oP2 : Suction mode 2 (OFF by timer; vacuum solenoid valve OFF after expiration of timer)
- oP3 : Suction mode 3 (ON; vacuum solenoid valve kept ON)
※ When using the latching type solenoid valve control, please use mode 2 adsorption.

1.「Blow-off time」bt
Set the time during which to keep the blow-off solenoid valve ON in response to the blow-off command signal. It can be set between 0.00 and 9.99 seconds. Beyond 9.99 seconds, "At" (automatic) is displayed. If "At" is set, Blow-off solenoid valve turns off synchronously with the activation (ON) of OUT1 at the time of blow-off. ("bt" is common to all suction modes.)

2.「Delay time 1」t 1
Set the delay time from the activation (ON) of OUT1 to the deactivation (OFF) of vacuum solenoid valve after vacuum has reached the set point during suction.
This can be set between 0.00 to 9.99 seconds.
("t1" can be set when the suction mode is 1 or 2.)

3.「Delay time 2」t 2
Set the delay time from the detection of blow-off command signal to the activation (ON) of blow-off solenoid valve.
It can be set between 0.00 to 9.99 seconds.
("t2" is common to all suction modes.)

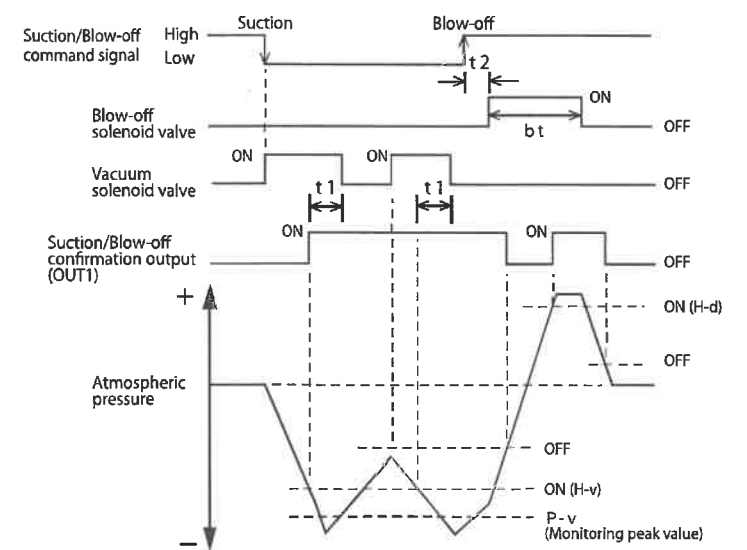### Suction/Blow-off command signal timing chart

Suction is started at the HIGH(supply voltage or open) to LOW (0V) trailing edge of start-up/down command signal. Keep the signal at low level during suction operation. Blow-off is carried out at the low-to-high leading edge.It is also to reverse logic of a Suction/Blow-off command signal. In this case a suction -operation is actuated at a start -up from LOW to HIGH , and a blow-off operation at a start-down from HIGH to LOW.

Suction/Blow-off command signal — suction at a LOW status(Lo) / suction at a HIGH status(Hi)

The last-end digit of a decimal point on LED display lights up during suction indicated by Suction/Blow-off command signal. Green LED is lit when vacuum solenoid valve is ON.

2. Suction/Blow-off confirmation output(OUT1)setting

Press the ⊕ key twice and wait for 3 seconds after having released it.

$H-v \rightleftarrows -46$ — Select a desired value for "H-v" ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$h-v \rightleftarrows -7$ — Select a desired value for hysteresis range "h-v" ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$H-d \rightleftarrows 200$ — Select a desired value for "H-d" at which to drive on OUT during blow-off using ⊕⊝ the key. Press ⊕ and ⊝ at the same time. (※ Note 1)

$h-d \rightleftarrows 50$ — Select a desired value for hysteresis range "h-d"during blow-off ⊕⊝ the key. Press ⊕ and ⊝ at the same time. (※ Note 2)

End

Note 1) With "H-d" set at OFF (beyond the upper limit), OUT1 outputs no signal during blow-off. If blow-off time "bt" is set at automatic (At), H-d cannot be set at OFF.
Note 2) With "H-d" set at OFF, h-d cannot be set.
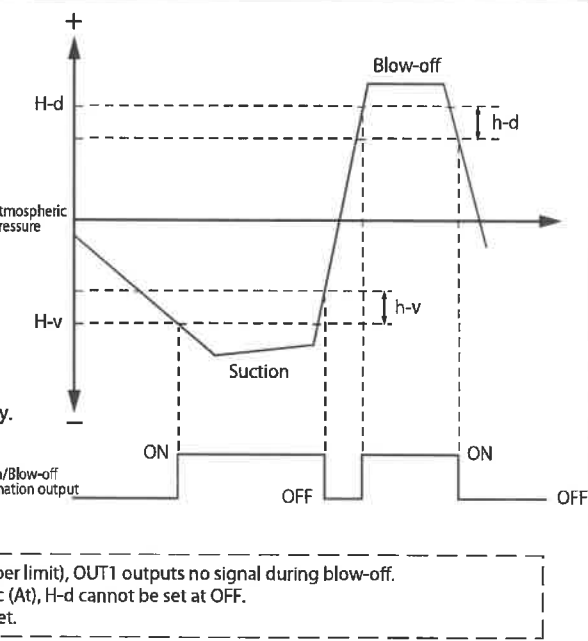
3. Energy saving mode, monitoring peak value, Suction/Blow-off reach time setting
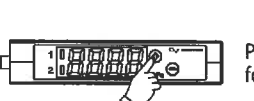
Press the ⊕ key three times and wait for 3 seconds after having released it.

$SAv \rightleftarrows oFF$ — Select the energy saving mode between ON and OFF using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$P-v \rightleftarrows oFF$ — Select a desired value for monitoring peak value "P-v" using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.
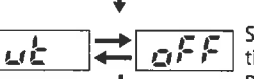
$vt \rightleftarrows oFF$ — Select a desired value for suction reach time"vt" using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$dt \rightleftarrows oFF$ — Select a desired value for blow-off reach time "dt" using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

End

1.「Energy saving mode」
With this mode set at ON, ten-second absence of key operation, puts out LED display and reduces current consumption.
The display can be restored by pressing any key.

2.「Monitoring peak value」P-v
In the case of the inability of vacuum to exceed the "P-v" during suction, "ALP" is displayed intermittently to warn of decreased vacuum due to the deterioration of pad or the like. This warning display can be cleared by pressing any key. "P-v" can be set within a range of H-v to the lower limit. With this value set at OFF, peak monitoring is not executed.

3.「Suction reach time」v t
If OUT1 does not become ON within the preset "vt" after the activation (ON) of vacuum solenoid valve, "ALv" is display intermittently to warn of decreased vacuum.

4.「Blow-off reach time」d t
If OUT1 does not become ON within the preset "dt" after the activation (ON) of blow-off solenoid valve, "ALd" is displayed intermittently to warn of decreased blow-off pressure.

Both "vt" and "dt" can be set between 0. 00 (OFF) and 9.99 seconds. If they are set at OFF, time monitoring is not performed. "ALv" and "ALd" displays are automatically cleared by the next Suction/Blow-off command. They can also be cleared by pressing any key.

4. Zero resetting

Press and hold ⊝ for more than 3 sec.
※ Zero resetting is possible only with an atmospheric pressure equivalent to ± 3% or less of F.S.

5. Security lock setting and resetting

LoC

Press ⊕ and ⊝ at the same time
※Unlock method: Press ⊕ and ⊝ at the same time again then UnC displays and it is unlocked.

6. Output mode and pressure unit setting

Press the ⊕ key four times and wait for 3 seconds after having released it.

$ou1 \rightleftarrows n.o.$ — Select a desired output mode for OUT1 using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$ouv \rightleftarrows n.o.$ — Select a desired output mode for vacuum solenoid valve using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$oud \rightleftarrows n.o.$ — Select a desired output mode for blow-off solenoid valve using ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

$Edg \rightleftarrows Lo$ — Select a desired logic of a suction/blow-off command signal with ⊕⊝ the key. Press ⊕ and ⊝ at the same time.

End

	Output mode
n.o.	Normal open (normally,non-current supplied)
n.c.	Normal close (normally,current supplied)

	Suction/Blow-off command signal
Lo	suction from HIGH to LOW
Hi	suction from LOW to HIGH

7. Alarm list

CE1	OUT1 overcurrent	Output current exceeding 125 mA	Check the load.
Err	Zero reset error	Zero resetting at over 3% of F.S.	Release atmospheric air during zero resetting.
Er1	System error	Internal failure	Please return to factory.
FFF	Rated range full	Pressure exceeding the range	
-FF	Back pressure full scale	Pressure exceeding the back pressure range	

8. Names and functions

OUT LED (red)
UP key
Vacuum solenoid valve LED (green)
Suction/Blow-off signal display
DOWN key
Solenoid valve connector
Power and control connector

Housing
TYPE:GHR-05V-S
Maker:JST
Contact
TYPE:SSHL-002T-P0.2
Maker:JST
Shrink tube
1000mm
AWG26, 3.8mm²

- Brown : +24V
- Black : OUT1
- White : Suction/Blow-off output
- Pink : Analog (1-5V)
- Blue : 0V

9. Specifications and model

MPS - 10A - □CA□

Output type
N : NPN ; P : PNP

※ Input type
Blank : Sinking input ; S : Sourcing input

※Input specification = Digital IN

Model	MPS-10A-□CA□
Applicable fluid	Air, Noncorrosive gas
Pressure range	-101 ~ 500 kPa
Display resolution	1kPa
Repeatability	Within ± 0.3% of F.S. and ± 1 digit
Response time	2.5msec
Specific output	NPN (30V DC) or PNP (24V DC) open collector output at 1 point (max. 125 mA)
Analog output	DC:1~5V (±0.1V) Output impedance:1kΩ
Digital in	Reed switch input one point: 0V or 24V(more than 1msec)
Solenoid valve output	NPN transistor output at 2 points (max. 250 mA)
Supply voltage	DC 24V, Ripple (Vp-p) 5% or less (※Note 1)
CE certification	EN61000-6-2 ; EN61000-6-4

※ Note 1: It must be consistent with the solenoid valve drive voltage.
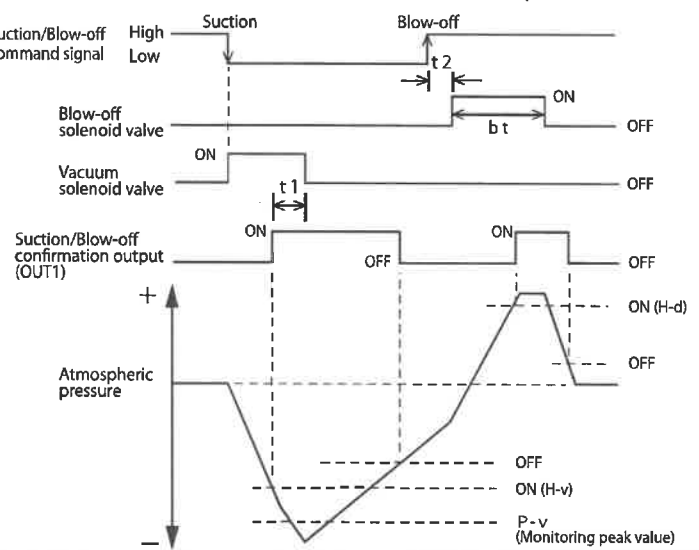

Operation example of suction mode 1 (to maintain suction by timer)

Suction command signal turns on the vacuum solenoid valve to generate vacuum so that suction can be started. Once OUT1 becomes ON upon reaching the preset vacuum, the solenoid valve turns off after an elapse of "t1." Thereafter, vacuum decreases, causing the vacuum solenoid valve to turn on again prior to the deactivation (OFF) of OUT1 to maintain the vacuum. (Vacuum solenoid valve subsequently turns on/off repeatedly.)
Blow-off command signal turns off the vacuum solenoid valve first and after an elapse of "t2," turns on the blow-off solenoid valve which remains ON during a period of "bt."
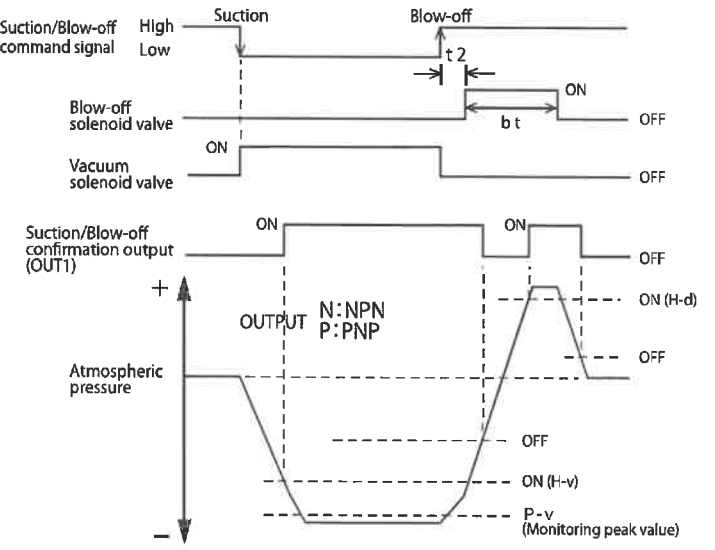
Operation example of suction mode 2 (to turn off the vacuum solenoid valve after expiration of timer)

Suction command signal turns on the vacuum solenoid valve to generate vacuum so that suction can be started. Once OUT1 becomes ON upon reaching the preset vacuum, the vacuum solenoid valve turns off after an elapse of "t1." Thereafter, vacuum decreases, but the vacuum solenoid valve does not turn on again even after the deactivation (OFF) of OUT1. Blow-off command signal turns off the vacuum solenoid valve first and after an elapse of "t2," turns on the blow-off solenoid valve which remains ON during a period of "bt."

Operation example of suction mode 3 (to keep vacuum solenoid valve ON)
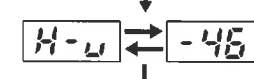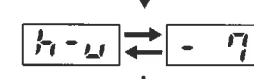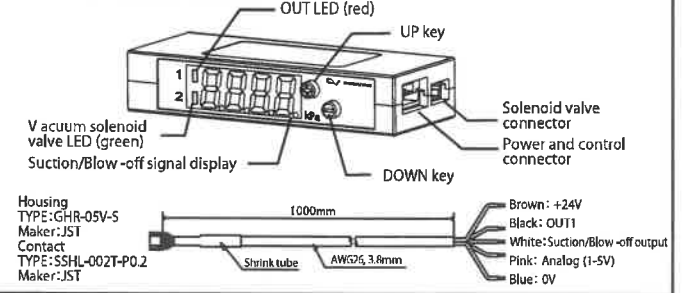
Suction command signal turns on the vacuum solenoid valve to generate vacuum so that suction can be started. Upon reaching the preset vacuum, OUT1 becomes ON. Vacuum solenoid valve remains ON regardless of the status of OUT1. Blow-off command signal turns off the vacuum solenoid valve first and after an elapse of "t2," turns on the blow-off solenoid valve which remains ON during a period of "bt."

OUTPUT N:NPN P:PNP