MVS-201 Series

Digital Display Pressure Sensor with Solenoid Valve Control

RoHS

Can be mounted on our CONVUM

Makes it possible to energy-saving by monitoring and controlling the pressure!

Energy-saving pressure sensor controls the solenoid valve mounted on CONVUM, and it controls the vacuum and blow-off in accordance with the setting pressure value. Energy-saving pressure sensor reduces the air consumption of CONVUM.

Air consumption **98%** reduced

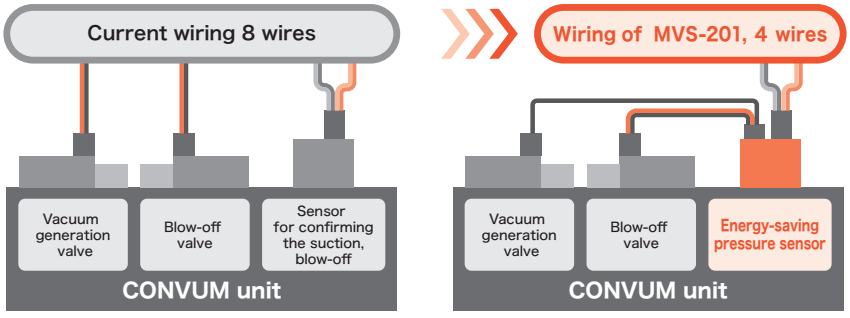
【Condition】
CONVUM :
MC22S10HS type
Supply pressure : 0.5MPa
Air consumption : 55L/min
Tube : φ4x2.5 Length 800mm

Example

Energy-saving function: before	Energy-saving function: after
Air consumption of MC22S10HS 55L/min	
Vacuum generation from 0kPa~-86.6kPa	
CONVUM staying ON during workpieces adsorption.	Upon reaching -86.6kPa, the check valve keeps vacuum pressure retained and CONVUM will turned off.
Vacuum generation time: 5 sec/1 tact	Vacuum generation time: 0.1 sec/1 tact (Setting vacuum pressure reach time)
Air consumption in 1 tact time 4.58L/min 55L/minX(5/60)=4.58L/min	Air consumption in 1 tact time 0.091L/min 55L/minX(0.1/60)=0.091/min
Air consumption 98% reduced. From 4.58L/min to 0.091L/min.	

Wire-saving

Wiring of I/O to PLC only need one four-core cable.
Wiring of vacuum generation/breaking solenoid valve is unnecessary.
It could help on space-saving of the device, reducing the sequencer loading, lowering down the operation time of electrical wiring.



Full warning function

Monitoring suction/blow-off reach time, warning code is displayed intermittently.
The problem can found immediately, even manifold type.

Suction reach time over Flash

Blow-off reach time over Flash

Peak value decrease Flash

※ Warning code display time can be set between 0 (OFF) and 9.99 seconds.
They can also be cleared by pressing any button.

How to Order

• Single Type

MVS — 201 — N ① C

Cable
M8(4P)plug (Connector with 2m lead wire)

① Output Type(Switch output)

Symbol	Specifications
N	NPN open collector
P	PNP open collector

• CONVUM Mounting Type

MVS — 201 P ① — MC22 ② — B ③

① Output Type(Switch output)

Symbol	Specifications
Blank	NPN open collector
P	PNP open collector

② Applicable CONVUM

Symbol	Applicable CONVUM
MC22	MC22
MC72	MC72
MPV3	MPV3

③ Vacuum Generation Valve Type

Symbol	Type
A	Normally opened
B	Normally closed
W	Self-holding Note1

Note1) The energy-saving function of a sensor cannot work if the self-holding valve is selected.

Option Parts

• Connector Cable for Sensor and Valve

MPS — ACCL8

MVS-201 Digital Display Pressure Sensor with Solenoid Valve Control

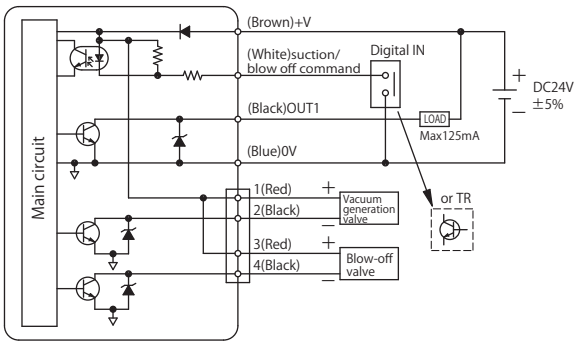
Specifications

Description \ Model number		Unit	MVS-201
Fluid			Air, non-corrosive gas, non-flammable gas
Diaphragm			Silicon diaphragm
Rated pressure range		kPa	-101 ~ 500
Setting pressure range		kPa	-101 ~ 500
Withstand pressure		MPa	0.8
Ambient temperature range		℃	0 ~ 50 (No freezing)
Ambient humidity range		%RH	35 ~ 85 (No condensation)
Power supply voltage		V	DC24±10% , Ripple (Vp-p) 5% or less Note1
Maximum power consumption		mA	45 (not include the driven current for valve)
Switch output	Type		NPN or PNP open collector 1 output
	Maximum load current	mA	125
Digital input (suction/blow off command)		V	Non-contact 1 input (more than 1msec)
Repeatability		%	±0.3 F.S 1digit or less
Temperature characteristic		%	Less than±2 F.S (At standard temperature 25℃ , range0 ~ 50℃)
Response time		ms	2.5 or less
Hysteresis			Variable
Display	Digital		3-digits, 7-segment red LED
	Operation		Output ON/OFF : red color LED, Vacuum generation valve ON/OFF : green color LED
Display/set resolution		kPa	1
Display time		s	0.2
IP class			IP40
Vibration resistance			10 ~ 150Hz, total amplitude 1.5 mm , 50 m / s^2 2 hours each direction of XYZ
Shock resistance		m/s^2	100 3 times each direction of XYZ
Electrical connection			M8 Connector
Cable			ϕ 4 0.3mm^2 4 lead wires 2m
Weight	Without cable	g	20
	With cable		77

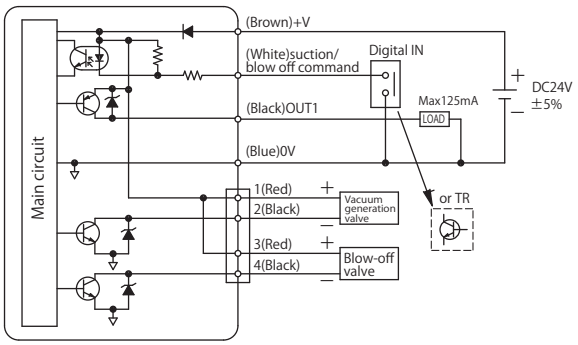
Note1) It must be consistent with the solenoid valve drive voltage.

Internal Circuit

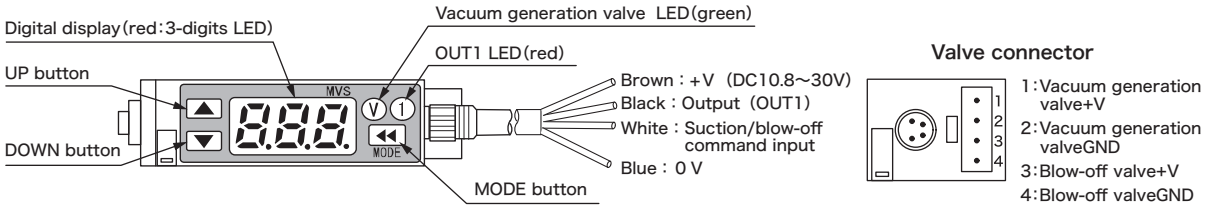
NPN Output



PNP Output



Display Description

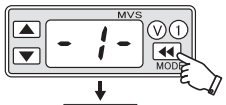


Setting・Function

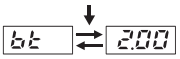
※ Please refer to the instruction manuals for details.

SUCTION MODE AND TIMER SETTING

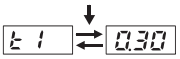
Press ◀◀ once and wait for 3 seconds after having release it.



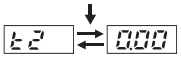
Select suction mode with ▼ ▲
set it with ◀◀



Select a desired value for "bt" with ▼ ▲
set it with ◀◀



Select a desired value for "t1" with ▼ ▲
set it with ◀◀



Select a desired value for "t2" with ▼ ▲
set it with ◀◀

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)

1. 「Blow-off time」bt

Set a 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.)

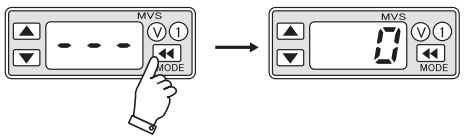
2. 「Delay time 1」t1

Set a 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」t2

Set a 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.)

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.

SECURITY LOCK SETTING AND RESETTING

Press the ▼ while the ◀◀ is pressed
LoC is displayed to inhibit further button operation.

To reset it, press the ▼ while the ◀◀ is pressed
UnC is displayed to release the security lock.

ERROR CODE INSTRUCTION

Error type	Error code	Error condition	Trouble shooting
OUT1 excess load current error	CE1	Load current is more than 125 mA.	Turn power off and check the cause of overload current or lower the current load under 125 mA, then restart.
Zero reset error	Err	During zero reset, input pressure is over ±3% F.S. of ambient pressure.	Change input pressure to ambient pressure and perform zero reset again.
System error	Er1	Internal system error	Please contact us.

OTHER DISPLAY ITEMS

Type	Display	Condition
Rated range full	FFF	Pressure value surpassing the rated range.
Back pressure full scale	-FF	Pressure value surpassing the back pressure range.

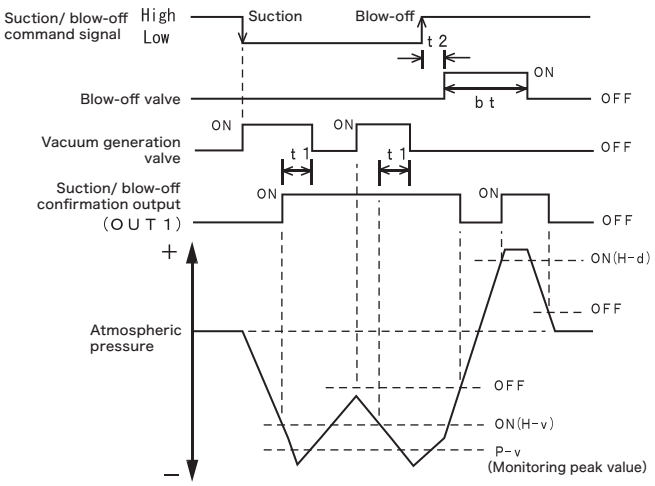
Setting・Function

※ Please refer to the instruction manuals for details.

3 TYPES OF SUCTION MODE

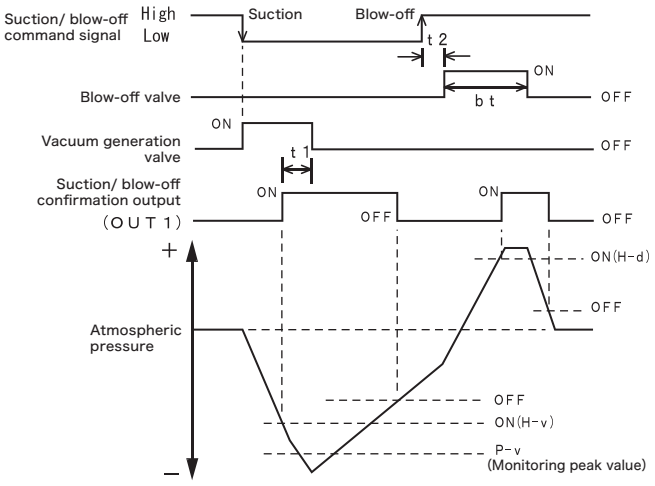
CONVUM Energy-saving Mode (Suction Mode 1)

Digital input (suction demand signal) turns on the vacuum solenoid valve to generate vacuum so that suction can be started.
Upon reaching the assigned vacuum volume, vacuum solenoid valve turns off. Thereafter, when vacuum decreases below the assigned vacuum volume, vacuum solenoid valve will turns on again. Vacuum solenoid valve subsequently turns on/off repeatedly until digital input was turned off.
When digital signal was turned off, blow-off solenoid valve turns on and start to blow-off.
By monitoring vacuum pressure as described above, air consumption will be dramatically reduced because air supply is no longer required during the time when pressure was holding at the assigned pressure volume.



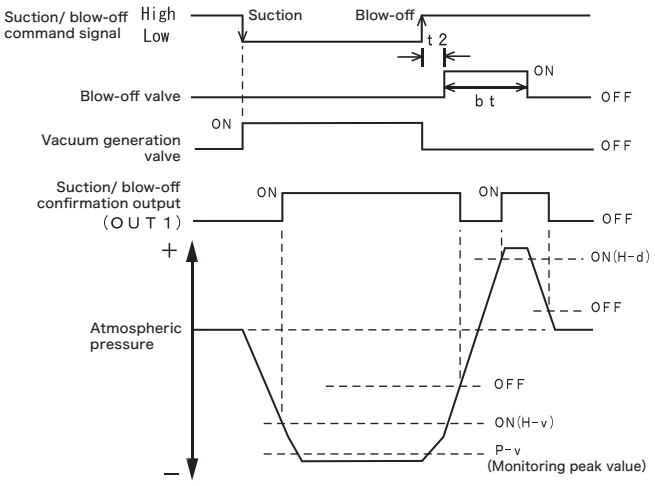
CONVUM Timer off Mode (Suction Mode 2)

Digital input (suction demand signal) turns on the vacuum solenoid valve to generate vacuum so that suction can be started.
Once OUT1 becomes ON upon reaching the assigned vacuum volume, vacuum solenoid valve turns off.
On this mode, the vacuum solenoid valve does not turn on again regardless of the value of vacuum pressure.
Digital signal turns off the vacuum solenoid valve, the blow-off solenoid valve turn on and start to blow-off.



CONVUM Vacuum Valve Keeping ON Mode (Suction Mode 3)

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 value of vacuum pressure.
Digital signal turns off the vacuum solenoid valve, the blow-off solenoid valve turn and start to blow-off.



Dimensions

(mm)