Please note that specifications may change without notice.
Please refer to our catalog and instruction manual for usage instructions and precautions.
Please contact our customer support center for delivery dates.

Issue date 1/6/2024

https://convum.co.jp/en

〒146-0092　Tokyo, Ota-Ku, Shimomalruko 2-6-18
TEL：03-5741-7201　FAX：03-5741-7090

Customer Support Center

0120-498586

Energy-saving pressure sensor with solenoid valve control

MVS-202 series

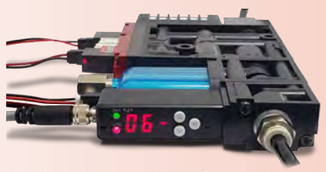
IO-Link CE UKCA RoHS

Redesigned from MVS-201!

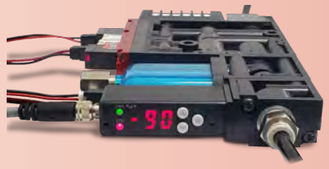
Input/output switching, Improved setting change buttons



- Switchable between sink/source input and NPN/PNP output
- The setting change button is made of rubber, creating a clicking sensation for improved operability.
- Display inversion function allows you to place images without worrying about the top and bottom



Display inversion function OFF



Display inversion functionON

CONVUM WEB

CONVUM

Energy-saving pressure sensor

MVS-202series

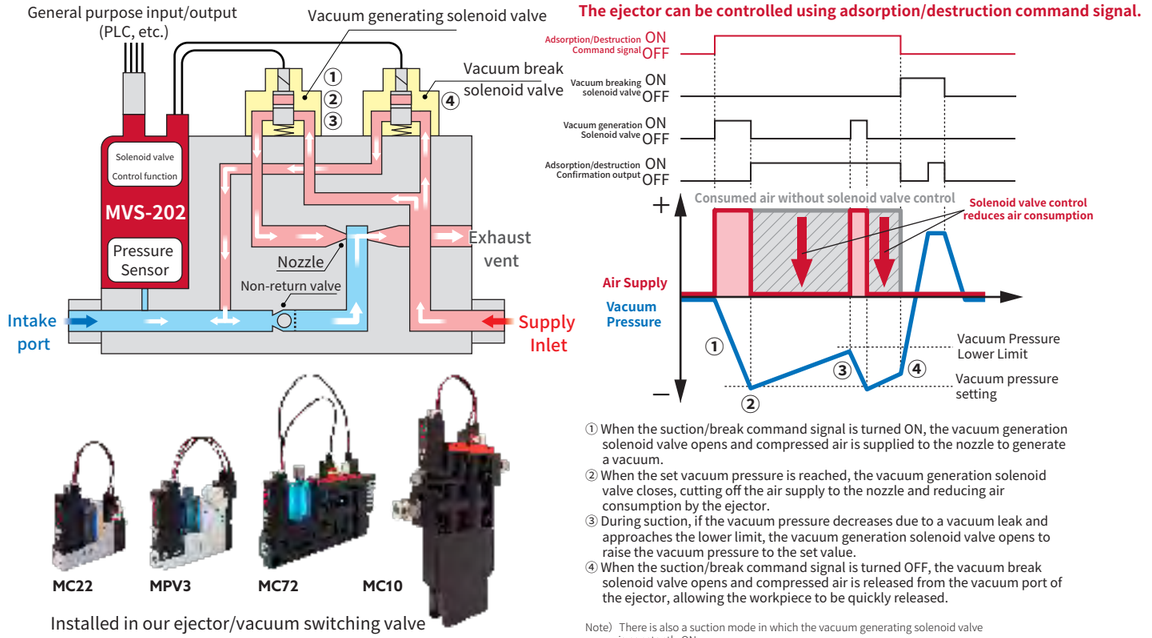


Equipped with a pressure sensor that controls vacuum generation/destruction.

Solenoid valve control reduces the ejector's air consumption.

Reduced wiring thanks to the M8 connector cable

Convum energy saving mode (oP1: suction mode 1)

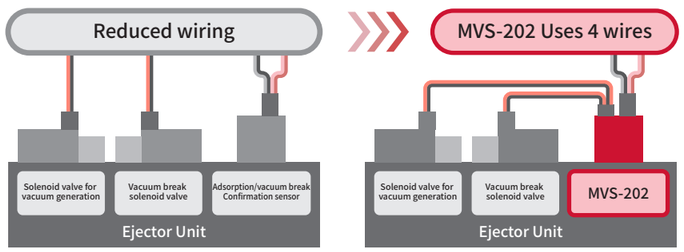


Installed in our ejector/vacuum switching valve

① When the suction/break command signal is turned ON, the vacuum generation solenoid valve opens and compressed air is supplied to the nozzle to generate a vacuum.
② When the set vacuum pressure is reached, the vacuum generation solenoid valve closes, cutting off the air supply to the nozzle and reducing air consumption by the ejector.
③ During suction, if the vacuum pressure decreases due to a vacuum leak and approaches the lower limit, the vacuum generation solenoid valve opens to raise the vacuum pressure to the set value.
④ When the suction/break command signal is turned OFF, the vacuum break solenoid valve opens and compressed air is released from the vacuum port of the ejector, allowing the workpiece to be quickly released.

Note) There is also a suction mode in which the vacuum generating solenoid valve is constantly ON.
Please check the catalog for [Various Suction Modes].

Reduced wiring

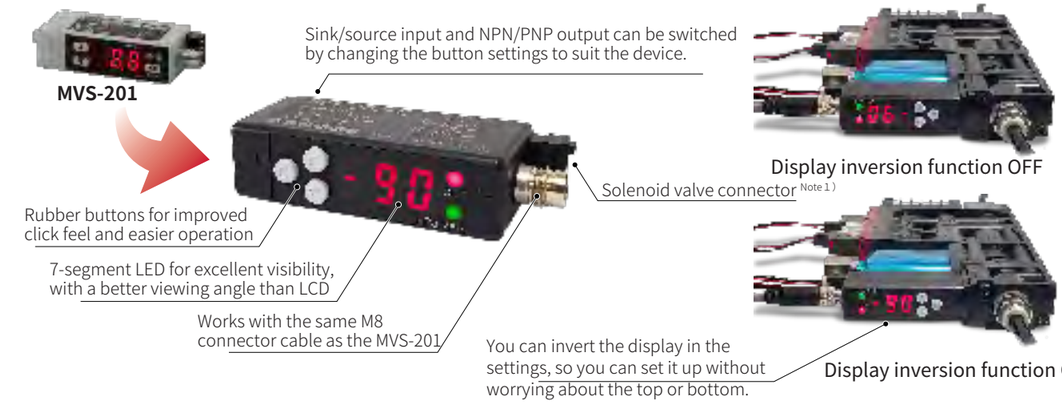




M8 connector cable (2m) MPS-ACCL8
Brown: 24V
White: Suction command signal IO-Link specification: N.C
Blue: 0V
Black: Suction/destruction confirmation signal (OUT1) IO-Link specification: C/Q signal

Only one M8 connector cable (4-core) is required for input/output wiring to the PLC, eliminating the need for wiring to the vacuum generation solenoid valve and vacuum break solenoid valve.
This saves space in the equipment, reduces the load on the PLC, and cuts the labor required for electrical wiring.

Sink/source input and NPN/PNP output can be switched. Compatible with MVS-201, renewed for easier use.



Note 1) The ejector solenoid valve connection cable used with the MVS-201 is not compatible, so if you need to replace it, please purchase the [Ejector solenoid valve connection cable] from the catalog.

Enhanced warning display/security lock functions

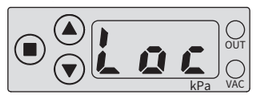
Attained vacuum pressure drop

Vacuum arrival time delay

Destruction time delay

A warning is displayed (blinking) if there is a drop in the achieved vacuum pressure (peak value) due to deterioration of the suction pad, or a delay in the time to reach vacuum/break due to a clogged filter or foreign matter.
With manifold-type ejectors, you can visually check which model is faulty.

Button operation disabled (locked)



This can disable button operation caused by unintentional contact or operator error.
You can switch between lock and unlock by pressing the ▼ key while pressing the ■ key.

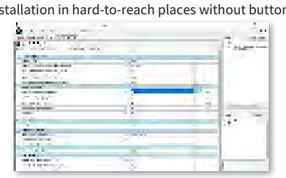


IO-Link specifications are available

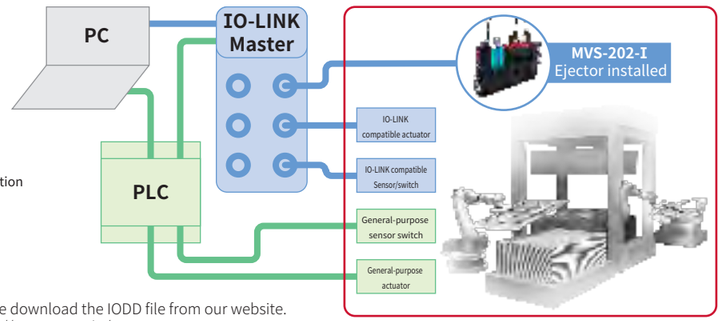
IO-Link

PC Operate the ejector on

- Change various settings (operation, threshold, etc.)
- ON/OFF operation of vacuum/break solenoid valve
- Zero reset
- Saving and copying setting information
- Check ejector status and warnings on PC
- Installation in hard-to-reach places without button operation



Vacuum suction transport device/robot



Please download the IODD file from our website.
https://convum.co.jp/en

MVS-202 Series

Energy-saving pressure sensor with solenoid valve control function

RoHS

Model Number

MVS-202-E-C
①②

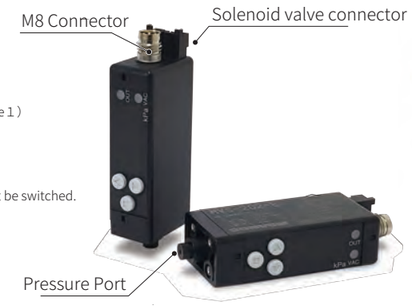
①Input/Output Specifications Note 1)

E	General Purpose Input/Output
I	IO-Link

Note 1) General-purpose input/output and IO-Link cannot be switched.

②M8Connector Cable(2m)

C	Included





Brown: +24V
White: Suction/destruction command input
IO-Link specification: N.C
Blue: 0V
Black: Suction/destruction confirmation output (OUT1)
IO-Link specification: C/Q signal

Ejector solenoid valve connection cable

MC22-C202
①②

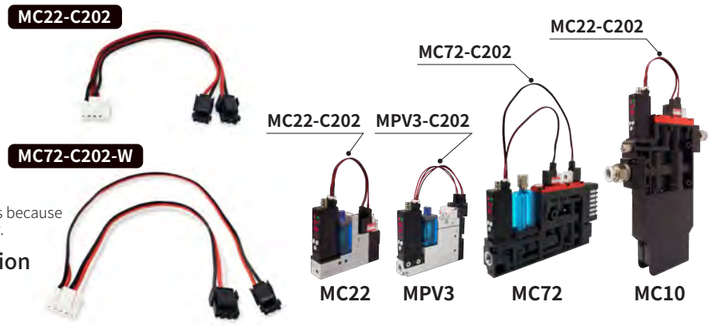
①Compatible ejector

MC22	For MC22, MC10
MC72	For MC72
MPV3	For MPV3 Note 2)

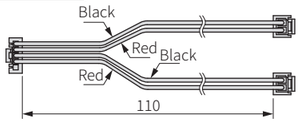
Note 2) The MPV3 is not compatible with other models because it has a different solenoid valve and connector.

②Ejector supply air flow path condition

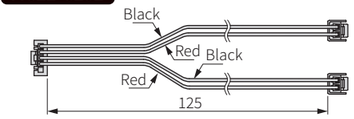
No symbol	Normally closed, normally open
-W	Self-retention



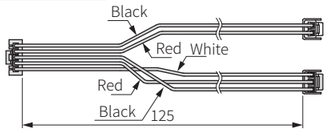
MPV3-C202



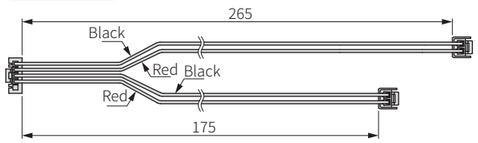
MC22-C202



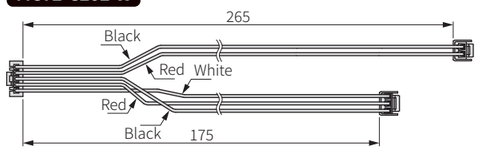
MC22-C202-W



MC72-C202



MC72-C202-W



Model number list and weight

CODE	Model Number	Body weight	Cable Mass
400100086	**MVS-202-E-C**	20g	58g
400100088	**MVS-202-I-C**	20g	58g

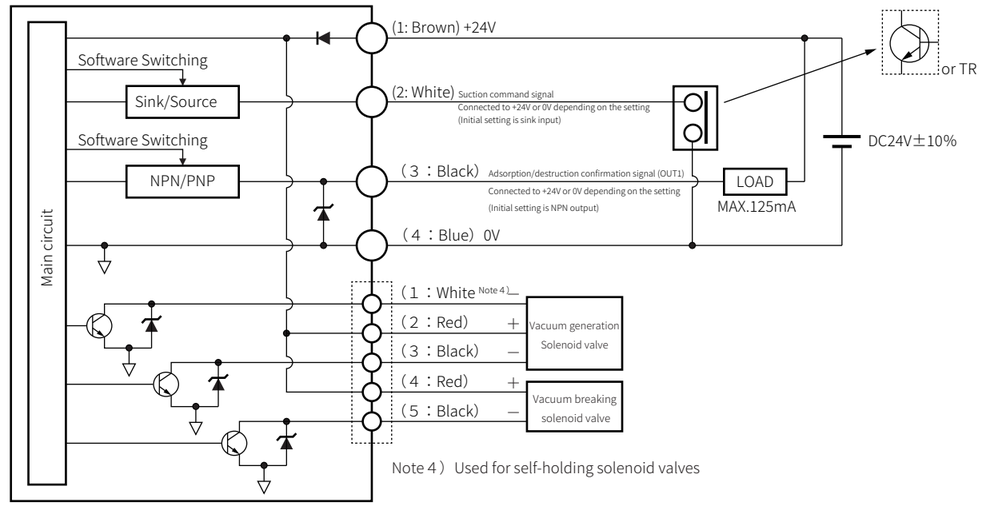
CODE	Model Number	Weight
218000821	**MC22-C202**	3g
218000822	**MC22-C202-W**	3g
218000823	**MC72-C202**	5g
218000824	**MC72-C202-W**	6g
218000825	**MPV3-C202**	3g

Specification

Item		Unit	MVS-202-E	MVS-202-I
Applicable Fluid			Non-corrosive, non-flammable gas, air	
Detection section structure		°C	Silicone Diaphragm	
Rated Pressure Range		kPa	-101 ～ +500	
Output setting pressure range		kPa	-101 ～ +500	
Proof pressure		MPa	0.8	
Ambient temperature		°C	0 ～ 50（No condensation）	
Ambient humidity		%RH	35 ～ 85（No condensation）	
Power supply voltage		V	DC24V±10%	
Current consumption		mA	10 or less (excluding solenoid valve drive current)	
Switch Output	Output Format		NPN or PNP O.C. 1 point Note 1)	IO-Link C/Q data communication
	Load current	mA	Rating：200	-
	Overcurrent Protection		Available	-
Digital IN (adsorption/destruction)			1 non-contact input (source/sink) Note 2)	IO-Link C/Q data communication
Overall Accuracy		%	±1.5 F.S. and below Note 3)	
Switch output response time		ms	2.5 or less	IO-Link C/Q data communication
Hysteresis setting			Variable	
Display	Digital display		3-digit 7-segment LED red	
	Output Indicator		Output ON/OFF: Red LED lights up when ON Vacuum solenoid valve ON/OFF: Green LED	Output ON/OFF: Red LED lights up when ON IO-LINK communication: Green LED flashes
Display resolution		kPa	1	
Display update time		s	0.2	
Display inversion function			Available	
Display energy saving function			Available	
Peak Monitoring			Available	
Adsorption arrival time monitoring			Available	
Breakdown time monitoring			Available	
Zero reset function			Available	
Security lock function			Available	
Adsorption Mode			oP1/oP2/oP3	
Solenoid valve energy saving function			Energy saving function with PWM control	
IO-Link Function			Without	Available
Solenoid valve control			Vacuum side solenoid valve double solenoid compatible	
Protected Class			IP40	
Vibration Resistance Test（JIS60068-2-64）			10Hz-150Hz broadband random vibration, acceleration 8m/s2 x-y-z each 0.5 hours	
Shock resistance test			980m/s2 XYZ 3 times each	
Electrical Connections	Control Unit		M8-4pin connector	
	Solenoid valve actuator		5pin BtoB connector	
External dimensions		mm	55×16×25	
Cable specifications (for control)			φ4 0.3mm² 4-core 2m	
Standards Directive			CE mark compliant (EMC directive, RoHS directive compliant)	

Note 1) The default setting is NPN output. It can be changed to PNP output by changing the settings.
Note 2) The default setting is sink input. It can be changed to source input by changing the settings.
Note 3) Includes 0 to 50°C, repeatability, temperature characteristics, and non-linearity.

Internal circuit diagram



Note 4) Used for self-holding solenoid valves

Maintenance part number

M8 Connector Cable（2m）

MPS-ACCL8



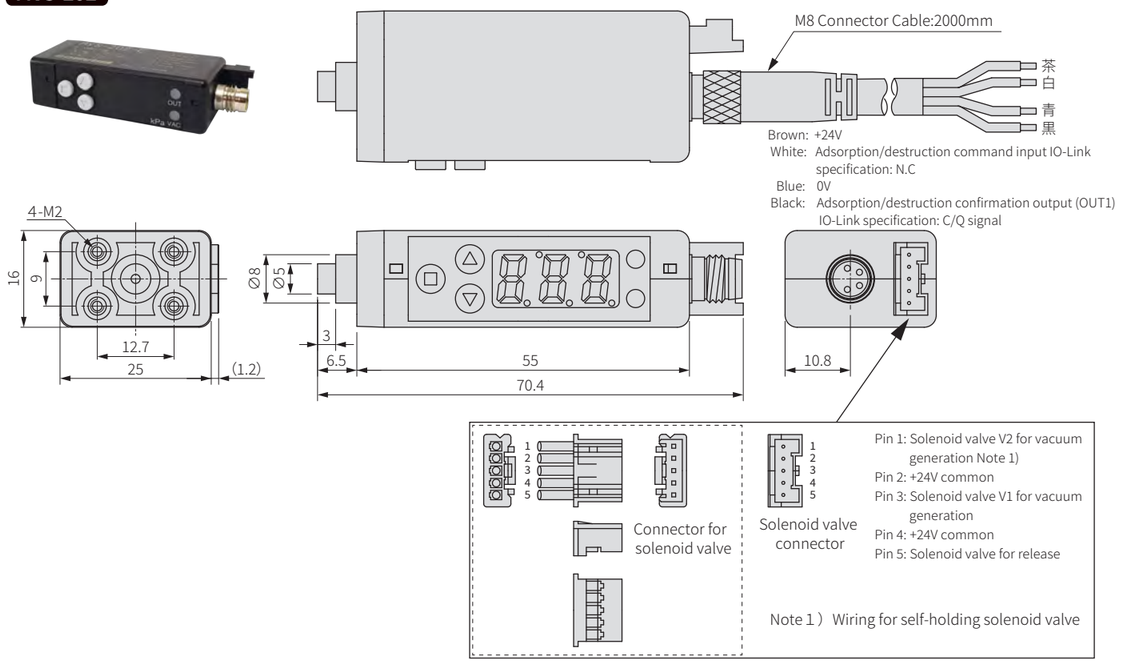
Model number list and weight

CODE	Model Number	Weight
418000040	**MPS-ACCL8**	58g

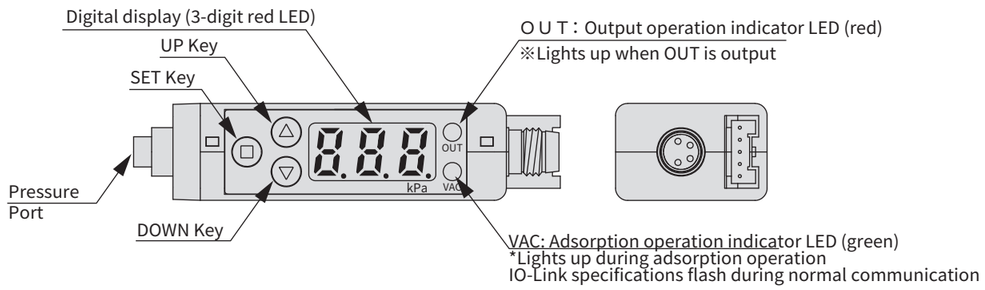
MVS-202 Series Energy-saving pressure sensor with solenoid valve control function

Dimensions

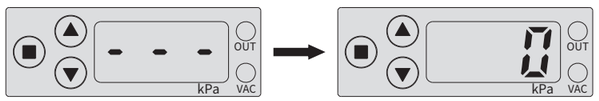
MVS-202



Names and functions of each part



Zero reset method



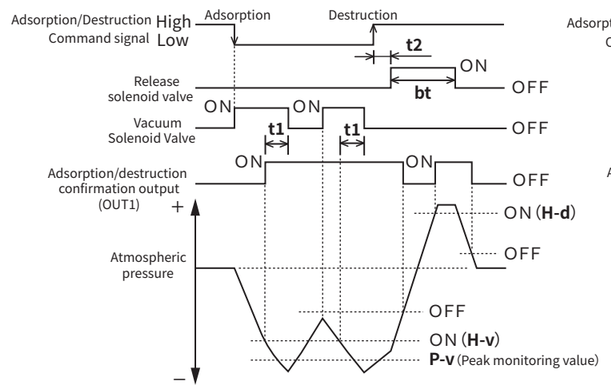
■ Press and hold the key for 3 seconds or more. When the display shows "0", the zero reset is complete.

Various suction modes

Note) Please refer to the instruction manual for detailed setting instructions.

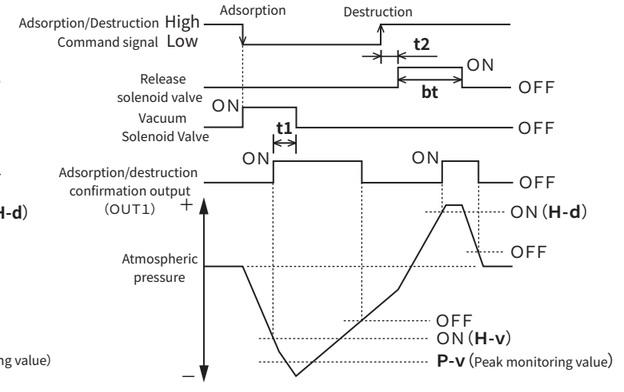
aP1 : Adsorption mode 1 operation (adsorption holding operation)

The vacuum solenoid valve is turned ON by the suction command signal and suction begins.
When the vacuum level reaches the set value and OUT1 is turned ON, the vacuum solenoid valve is turned OFF after t1. If the vacuum level subsequently decreases, the vacuum solenoid valve is turned ON again just before the OFF point of OUT1 to maintain the vacuum level.
(Then, ON/OFF is repeated.)
The vacuum solenoid valve is turned OFF by the break command signal, and after t2
the break solenoid valve is turned ON. The break solenoid valve is ON for bt.



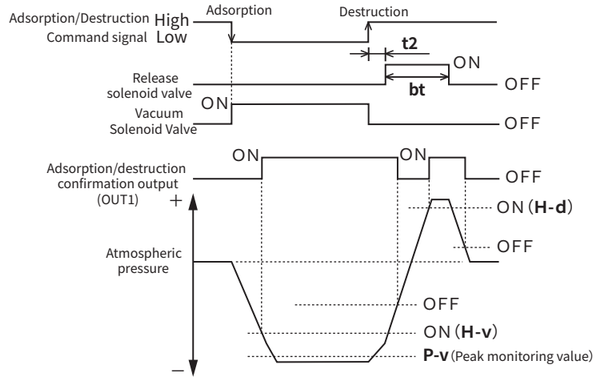
aP2 : Adsorption mode 2 operation (vacuum solenoid valve one-time operation)

The vacuum solenoid valve turns ON once in response to the suction command signal and begins suction.
When the degree of vacuum reaches the set value and OUT1 turns ON, the vacuum solenoid valve turns OFF after t1 and will not turn ON until the next suction command signal. The release solenoid valve turns ON for bt t2 after the break command signal turns ON.



aP3 : Adsorption mode 3 operation (operation linked with vacuum solenoid valve adsorption command signal)

The vacuum solenoid valve turns ON in response to the suction command signal and begins suction.
Regardless of whether OUT1 is ON or OFF, the vacuum solenoid valve will remain ON as long as the suction command signal is ON.
OUT1 turns ON when the vacuum level reaches the set value.
The vacuum solenoid valve is turned OFF in response to the break command signal, and after t2 the break solenoid valve begins operating, remaining ON for bt.



bt "Breakdown time" Sets the time to turn on the break solenoid valve by the break command signal. Can be set from 0.00 to 9.99 seconds. After 9.99 seconds, At (automatic) is displayed. If At is set, the break solenoid valve turns off in sync with OUT1 turning on at break. (bt is common to all adsorption modes.)

t1 "Delay time" Sets the delay time from when the vacuum level during adsorption reaches the set value and OUT1 turns on until the vacuum solenoid valve turns off. Can be set from 0.00 to 9.99 seconds. (t1 can be set when adsorption mode is 1 or 2.)

t2 "Delay time 2" Sets the delay time from when the break command signal is detected until the break solenoid valve turns on. Can be set from 0.00 to 9.99 seconds. (t2 is common to all adsorption modes.)

MVS-202 Series Energy-saving pressure sensor with solenoid valve control function

Precautions Pressure Sensor with Solenoid Valve Control Function (MVS-202)

Please read this before use. Please also refer to "For safe use" in this catalog, "Common precautions" and "Common precautions for Convum" in the general catalog, and the "Instruction manual" for this product. Please check our website: https://convum.co.jp

Website

Usage notes

⚠ Warning

- This product is not explosion-proof. Do not use in the presence of explosive or flammable gases, or in an atmosphere of corrosive gases.

⚠ Caution

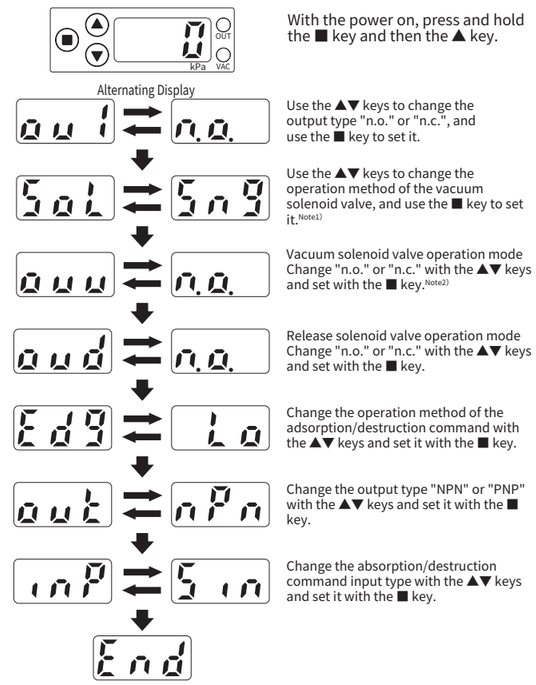
- To prevent unexpected malfunctions, turn off the power supply before wiring the device or inserting or removing the device connector.
- The output (OUT) method and adsorption/destruction command input method of this product can be changed by program, but to avoid unexpected malfunctions when making the change, change the output and input method before wiring or stop the system and never change it while it is running.
- Use a power supply voltage of DC24V±10% for this product. Connecting a voltage exceeding this limit or a primary power supply of AC100V or more may cause malfunctions such as burning. *The control solenoid valve should also be of DC24V specification.
- Strong noise from high-voltage lines and power lines can cause malfunctions, so wire the device away from these lines. Also take noise countermeasures as necessary.
- The protective structure of this product is IP40, so take measures to prevent liquids and dust (fine particulate foreign matter) from entering the main unit.
- When using with IO-Link specifications, the wiring cable length between this unit and the master device should be within 20m.

Initial Setup

⚠ Attention

- The product is delivered with the parameters set to the initial settings, so it may not operate correctly depending on the ejector or general-purpose I/O device you are using. Please follow the instructions below for "How to set the output OUT, solenoid valve output type, and command input type."

How to set the output OUT, solenoid valve output type, and command input type



With the power on, press and hold the ■ key and then the ▲ key.

Use the ▲▼ keys to change the output type "n.o." or "n.c.", and use the ■ key to set it.

Use the ▲▼ keys to change the operation method of the vacuum solenoid valve, and use the ■ key to set it.[Note1)]

Vacuum solenoid valve operation mode Change "n.o." or "n.c." with the ▲▼ keys and set with the ■ key.[Note2)]

Release solenoid valve operation mode Change "n.o." or "n.c." with the ▲▼ keys and set with the ■ key.

Change the operation method of the adsorption/destruction command with the ▲▼ keys and set it with the ■ key.

Change the output type "NPN" or "PNP" with the ▲▼ keys and set it with the ■ key.

Change the absorption/destruction command input type with the ▲▼ keys and set it with the ■ key.

Note 1） Setting the operation method of the vacuum solenoid valve

- If the vacuum solenoid valve is a single solenoid, set it to "Sng".
- If the vacuum solenoid valve is a double solenoid, set it to "dbL".

Note 2） Setting the operation mode of the vacuum solenoid valve

- If the solenoid valve is normally closed, set it to "n.o."
- If the solenoid valve is normally open, set it to "n.c."

Display	OUT Output Format
n.o.	Normally open
n.c.	Normally closed

Display	OUT Type
nPn	NPN open collector output
PnP	PNP open collector output

Display	Adsorption/destruction command signal operation method
Hi	Adsorption starts from High to Low
Lo	Adsorption starts from Low to High

Display	Adsorption/destruction command signal input type
Sin	When the input terminal is connected to 0V, it turns ON.
Sou	Connect the input terminal to +24V to turn it ON.

Connect the input terminal to +24V to turn it ON.

Input	Output	MVS-201 Model Number	MVS-202 Model Number
Sink	NPN Output	MVS-201-NC	MVS-202-E-C Note 1）
Sink	PNP Output	MVS-201-PC	
Source	PNP Output	3011063（Custom）	

Note 1） After powering on, input and output can be switched by pressing a button. Settings can be changed after purchase. The initial setting for the MVS-202-E-C is sink input NPN output.

MVS-201 mounted ejector MVS-202 alternative model number

The pressure sensor selection format will change from 21 to 22.
21P (MVS-201 equipped PNP output specification) in the old catalog will be unified with 22 (MVS-202 equipped). Please change the output type to PNP in the [Initial settings] setting in this catalog.

MC22 series



MVS-201 Model number: Example) **MC22M05HS21LC4BLR303**
MVS-202 Model number: Example) **MC22M05HS22LC4BLR303**
①

MC72 series



MVS-201 Model number: Example) **MC72M20HS21C4BLR4**
MVS-202 Model number: Example) **MC72M20HS22C4BLR4**
①

MC10 series



MVS-201 Model number: Example) **MC10MP21S202**
MVS-202 Model number: Example) **MC10MP22S202**
①

①On-board pressure sensor

Code	On-board sensors	Pressure Range [kPa]	Display	Switch Output	Analog Output	Input Specifications
21	MVS-201	-101～500	Digital (7-segment LED)	NPN 1 point	Without	sink
22	MVS-202	-101～500	Digital (7-segment LED)	NPN/PNP1 point Note 1）	Without	Sink/Source Note 1）

Note 1） The initial setting is NPN output, sink input. This can be switched by changing the sensor settings.

Alternative models of MVS-202 vacuum switching equipped with MVS-201

The pressure sensor selection format will be changed from 201 to 202.
The 201P (MVS-201 equipped PNP output specification) in the old catalog will be unified with 202 (MVS-202 equipped). Please change the output type to PNP in the [Initial settings] settings of this catalog.

MPV3 series



MVS-201 Model number: Example) **MPV3S2N201 24BL**
MVS-202 Model number: Example) **MPV3S2N202 24BL**
②

②On-board pressure sensor

Code	On-board sensors	Pressure range [kPa]	Display	Switch Output	Analog Output	Input Specifications
201	MVS-201	-101～500	Digital (7-segment LED)	NPN1 Point	Without	Sink
202	MVS-202	-101～500	Digital (7-segment LED)	NPN/PNP1 Point Note 2）	Without	Sink/Source Note 2）

Note 2） The initial setting is NPN output, sink input. This can be switched by changing the sensor settings.

⚠ Safety Instructions

Please also read the general precautions, individual precautions for each series, and product instruction manuals.

The precautions listed here are intended to ensure the safe and correct use of our products and to prevent injury or damage . The precautions are divided into three categories, [Danger], [Warning], and [Caution], to indicate the degree of risk and urgency of injury to persons or damage to property that may result from improper handling. All of these contain important safety information and must be observed.

⚠ Danger When incorrect handling is anticipated to result in imminent danger of death or serious injury to a person.

⚠ Warning When incorrect handling is anticipated, there is a risk of death or serious injury to persons.

⚠ Caution When handling is incorrect, there is a risk of personal injury or damage to property.

Be sure to also observe JIS B8370※1 or ISO 4414※2, the Industrial Safety and Health Act, the High Pressure Gas Safety Act, and other safety regulations.
※1 JIS B8370: General rules for pneumatic systems
※2 ISO 4414: Pneumatic fluid power-Recommendations for the application of equipment to transmission and control systems
Note that even matters described in "Caution" may lead to serious consequences depending on the situation.
All of these contain important information, so be sure to observe them.

⚠ Warning

●Vacuum and pneumatic equipment should be selected correctly. The suitability of vacuum and pneumatic equipment should be determined by the designer or person responsible for determining the specifications of the pneumatic system. Due to the wide variety of conditions under which the products listed here are used, their suitability for the system should be determined by the vacuum and pneumatic system designer or person responsible for determining the specifications, after analysis and testing as necessary. Assurance of the desired performance and safety of the system is the responsibility of the person who has determined the suitability of the system. Please continue to review all specifications and configure the system according to the latest product catalogs and documentation, taking into account the circumstances regarding the possibility of equipment failure.

● Handle the equipment only by persons with sufficient knowledge and experience. Improper handling of compressed air can cause personal injury or property damage. Vacuum and pneumatic equipment are designed as parts for industrial machinery, and assembly, operation, and maintenance of machinery and equipment using them should be performed by persons with sufficient knowledge and experience.

●Never handle the machinery or equipment or remove the equipment until safety is confirmed. When inspecting or servicing equipment or devices, make sure that measures have been taken to prevent the actuator from falling or running out of control. When removing equipment, make sure that measures have been taken to prevent falling or runaway, shut off the power supply to the system, and exhaust the compressed air in the system before removing the equipment. When restarting a machine or equipment, make sure that measures have been taken to prevent it from jumping out of the machine or equipment, and then do so with caution.

●The products listed here are mainly intended for general industrial use. If the products are to be used under the following conditions or in the following environments, please take safety measures and consult with us in advance. Use under conditions or in environments other than those specified, or use outdoors. Use in safety equipment such as nuclear power plants, railroads, aircraft, vehicles, ships, medical equipment, equipment that comes in contact with beverages or food, entertainment equipment, emergency cutoff circuits, and clutch and brake circuits for presses. Use in applications requiring special safety requirements where significant injury or damage to persons or property is expected. When there is an imminent danger of death or serious injury to persons if the product is mishandled.

Warranties and Disclaimers

1. Warranty

(1) If a failure occurs during the warranty period due to our responsibility, we will provide a replacement product or necessary replacement parts free of charge, or repair the product at our company free of charge.

(2) The warranty period for our products is one year from the start of use or one year and six months after delivery, whichever comes first. However, some products may have a specified number of endurance cycles or sliding distance, etc. For details, please contact our Customer Service Center (Customer Support Center).

(3) Since the vacuum pad is a consumable part, the warranty period of one year from the start of use is not applicable, and the warranty period is one year after delivery. However, even within the warranty period, the warranty does not apply if the deterioration of the rubber material or wear caused by the use of the vacuum pad is the cause.

2. Disclaimer

(1) The following items are excluded from the warranty coverage. The product is used outside the scope of the specifications described in the catalog or specification sheet. The failure is caused by reasons other than the product in question. The failure is caused by modification or repair that is not our responsibility. The failure is caused by reasons that cannot be foreseen with the technical knowledge at the time of delivery. When it is caused by reasons that are not our responsibility, such as natural disasters, calamities, acts by a third party, or intentional

Please note that specifications may change without notice.
Please refer to our catalog and instruction manual for usage instructions and precautions.
Please contact our customer support center for delivery dates.

https://convum.co.jp/en

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