

Digital electro pneumatic regulator EVD series



Compact high-function digital control

D sub-connector

Digital indicator

Operation key

Modular design

EVD-1000

- Port size: Rc1/4
- Flow rate: 400 ℓ /min.
- Pressure range: 500kpa
- Grease free flow path section

42

100

Large flow rate type

EVD-3000

- Port size: Rc1/4, Rc3/8
- Flow rate: 1500 ℓ /min.
- Pressure range: 500kpa

EVD Series

Digital electro pneumatic regulator

The easy-to-use highly functional compact EVD Series digital electropneumatic regulator features a variety of new functions including pressure display, error display, and direct memory.

User-friendly, outstanding installation performance

The digital display shows control status at a glance.

3-digit output pressure display
Output status (switch output ON-OFF) is displayed in addition to error display.

Output display 3-digit numerical LED display



Parallel input available as standard

Direct control is possible from the PLC.

Compact design is 25% smaller (CKD comparison)



The highly universal D-sub connector enables bidirectional connection.

The connection is rotated 90 degrees from top to side, enabling top or side connection to be selected based on use.



Modular design

Filters and regulators, such as the C1000 Series, are connectable.



Realizing high-level functions with microcomputer

Error display function

Errors are displayed and reported with electric signals.

Zero/span adjustment function

Zero and span can be adjusted according to the usage methods

Direct memory function

External input signals are not required.
Secondary pressure is adjusted as desired with operation keys.

Switch output function

Switch outputs (built-in overcurrent protection) is possible by setting the upper/lower limit pressure

Highly precise high-response pressure control

Linearity $\pm 0.3\%$

Hysteresis 0.5%

Response time 0.2sec

Environment-friendly design



No lead or polyvinyl chloride

All lead and polyvinyl chloride has been eliminated.

Energy saving

"Automatic power off" automatically turns off the digital display.

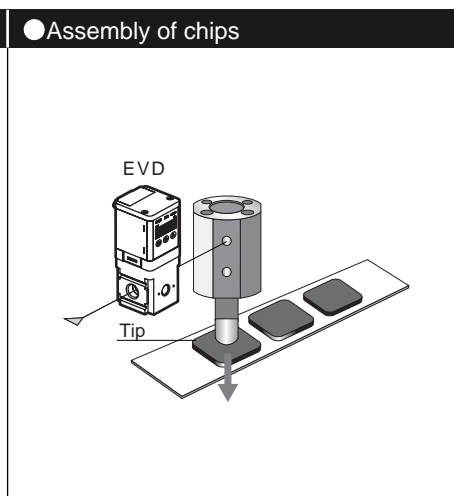
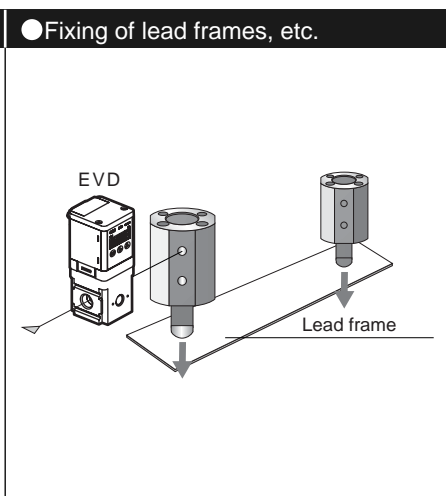
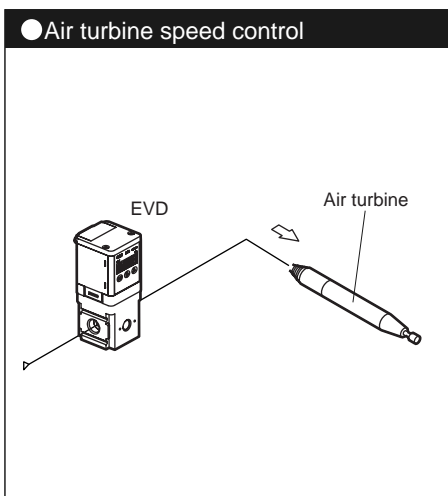
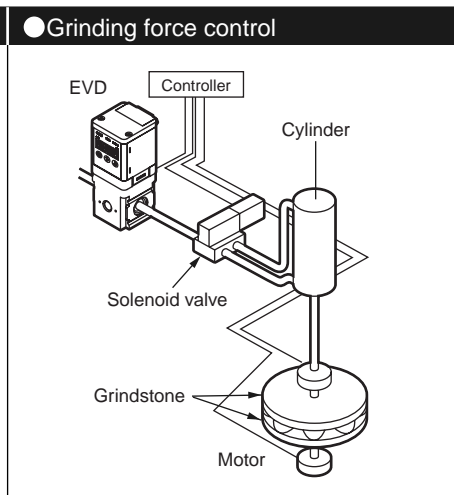
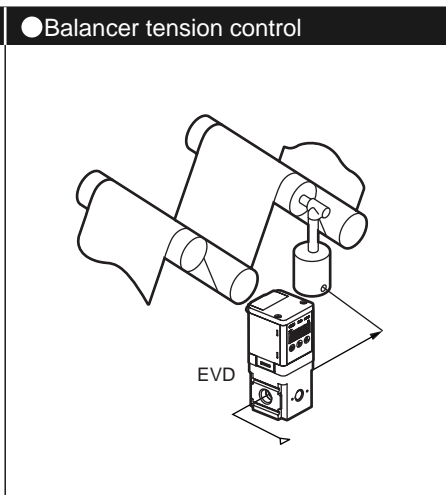
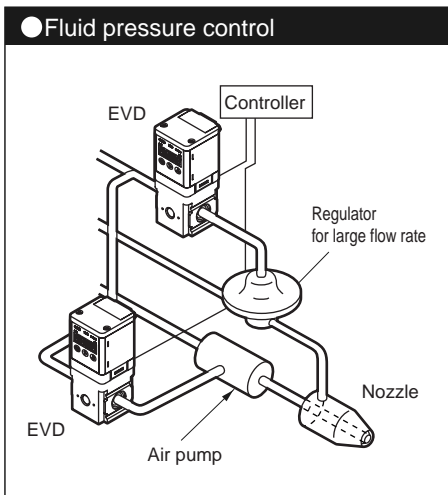
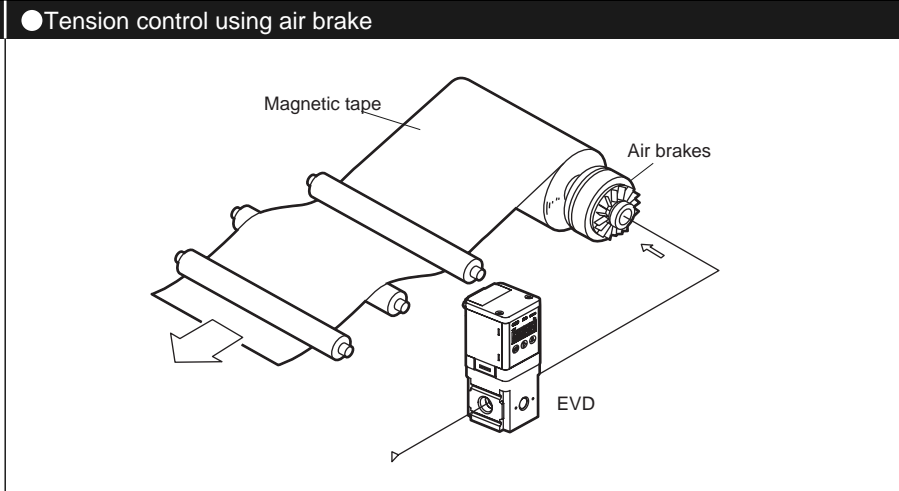
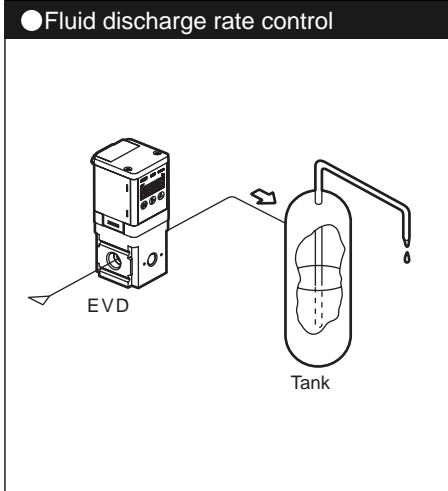
Material display

Materials are indicated on main components to facilitate recycling.

Digital electro pneumatic regulator variation

Series	Pressure range	Input signal	Port size	Output type	Maximum flow rate	Flow path material	Page
EVD-1000	500 kpa	Analog output Parallel	Rc1/4	NPN PNP Switch output Analog output	400 ℓ /min	Grease free	1
EVD-3000	500 kpa	Analog Parallel	Rc1/4 Rc3/8	NPN PNP Switch output Analog output	1500 ℓ /min	Fluorine grease Vaseline (Custom order)	5

Example of proportional pressure controls





Safety Precautions

Always read before starting use

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanical mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely.

Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience in handling.

2 Use this product in accordance of specifications.

Contact CKD when using the product outside the unique specifications range, when using it outdoors, and when using it under the conditions and environment below. Do not attempt to modify or additionally machine the product.

- ① Use for special applications requiring safety including nuclear energy, railroad, aviation, ship, vehicle, medical equipment, equipment, or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.
- ② Use for applications where life or assets could be adversely affected, and special safety measures are required.

3 Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.


ISO 4414, JIS B 8370 (pneumatic system rules), JIS B 8368 (pneumatic cylinder), JPAS 005 (principles for pneumatic cylinder use and selection), High Pressure Gas Maintenance Laws Occupational Safety and Sanitation Laws, and other safety regulations, corporate standards, and regulations.

4 Do not handle, pipe, or remove devices before confirming safety.


- ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
- ② Note that there may be hot or charged sections even after operation is stopped.
- ③ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Discharge any compressed air from the system, and pay enough attention to possible water leakage and leakage of electricity.
- ④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions on the pages below to prevent accidents.


■ The safety cautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

(DANGER)

 **WARNING:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

(WARNING)

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

(CAUTION)

Note that some items described as "CAUTION" may lead to serious results depending on the situation.

In any case, important information that must be observed is explained.



Safety precautions

Always read this section before starting use.

Design & Selection

⚠ WARNING

■ Thoroughly understand the characteristics of compressed air before designing the pneumatic circuit.

- The same functions as mechanical, hydraulic, or electrical methods cannot be anticipated if instantaneous stop holding is required during an emergency stop.
- Pop-out, air discharge, and leakage are caused by compression and expansion of air characteristics.

■ Confirm that the product will withstand the working environment.

- This product cannot be used in an environment containing corrosive gas, chemical liquids, solvents, water, vapor, or ozone. If water drip, oil or metal chips (spatter or cutting chips, etc.) could come in contact with the product, provide appropriate guarding.
- This product cannot be used in the environment containing flammable gas.

■ Take care of electrical circuits during emergency stops and cylinder operation during a service interruption.

■ Install a "pressure switch" and "shut-off valve" on the device's compressed air inlet.

- The pressure switch will disable operation until set pressure is reached. The shut-off valve will exhaust compressed air in the pneumatic pressure circuit, and will prevent accidents caused by operation of pneumatic components by residual pressure.

■ If the regulator is left with power off and primary pressure applied, secondary pressure may rise to the primary level. Due to the structure, a small amount of air is consumed from the EXH port when secondary pressure is generated.

Set the primary regulator to 0 or use a valve on the primary side to shut off the supply source when not using the regulator.

⚠ CAUTION

■ Indicate the maintenance conditions in the device's instruction manual.

- The product's function can drop markedly with working status, working environment, and maintenance, and can prevent safety from being attained. With correct maintenance, the product functions can be used to the fullest.

■ Confirm that power used is constant voltage.

■ Check leakage current to prevent the product from malfunctioning due to leakage current from other controls.

- When using a programmable controller, etc., leakage current could cause the electro pneumatic regulator to malfunction.

For 24 VDC	1.8mA or less
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■ Response is affected by the working pressure and load volume. If repeatability with stable response is required, install a regulator before the product.

■ Do as follows to prevent malfunction due to noise.

- Insert a line filter in the AC power supply line.
- Use a surge suppressor, such as a CR or diode on the conductive load (solenoid valve, relay, etc.), and remove noise where generated.
- Keep wiring to the device separate from strong magnetic fields.
- Connect wiring to the device with a shield wire.
- Ground the shield wire on the power supply.
- Keep the power cable as short as possible.
- Do not share power with noise-generating devices such as inverters or motors.
- Do not lay power, signal, or other power cables in parallel.

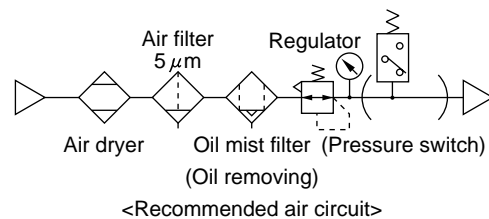
■ Due to wiring, power ground and signal common are the same for the current input type.

- When driving several electropneumatic regulators with 1 PLC and D/A, the D/A's circuitry could prevent the correct signal from being input. Check with the PLC maker.

■ Current input is used with a 1-5 V input signal but impedance is less than other voltage input (250Ω). Use an appropriate signal generator.

■ Poor air quality adversely affects function and life.

- For the pneumatic pressure source, supply air free of solids, moisture, and oil using a dryer, air filter, or oil mist filter. Air containing oil could adversely affect function.



- When secondary pressure is lowered by an input signal, etc., secondary air passes through and is discharged from the EXH port. Contamination of secondary piping and internal load adversely affects function, so piping should be kept as clean inside as possible.

■ If power is turned off during pressurization, secondary pressure is maintained.

- To set exhaust, lower the set pressure with the input signal before turning power off or exhaust with a shutoff valve. There is no guarantee that this held state can be maintained for a long time.

Design & Selection

⚠ CAUTION

- Confirm that primary pressure does not drop to less than "set secondary pressure + maximum control pressure x 0.2."
 - Regulator life is shortened if primary pressure is not supplied for a long time while power is on. Avoid such use.
- When releasing secondary control pressure, such as air exhaust, into the atmosphere, pressure may fluctuate depending on piping and other conditions. Test under actual working conditions, or consult with CKD before doing this.
- Select a dryer, air filter, oil mist filter, or regulator with a flow higher than that of this regulator.

■ Work environment

Avoid using this regulator where it will be subject to direct sunlight, water or oil, etc. Consult with CKD when using outside designated specifications or for special applications.

■ Dripproof environment

The regulator's protective structure is equivalent to IP40. Do not install it where water, salt, dust, or cutting chips are present or under pressurized or de-pressurized conditions. Use at sites of drastic temperature changes or high humidity may cause damage due to dew condensation in the regulator.

- Even when set to 0 MPa, secondary pressure remains within 5 kPa or less. If 0 MPa is required, bleed the secondary side or install a 3-way valve on the secondary side to change to atmosphere, etc.

Installation & Adjustment

⚠ DANGER

Installation

- Set power voltage and output to the specified voltage. Using a voltage exceeding that specified could result in malfunction, controller damage, electric shock, or fire. Do not use a load exceeding the output rating. Failure to observe this may result in output damage or fire.

⚠ WARNING

Wiring

- Connector pin and cables conductors color must be checked when wiring. Check wire color with handling precaution, since improper wire connection leads to destruction/failure and malfunction.
- Insulation of wiring must be checked. Contact to another circuit, ground fault or terminal insulation defective must be eliminated. Overcurrent may be admitted to damage.
- Use DC safety power supply in rated, insulated from alternating current power, for this product. If power supply is not insulated, electric shock may result. If power supply is not stabilized, peak magnitude exceeds rated, and damages this product, worsening accuracy.
- Stop controllers and machinery and turn power off before wiring. Starting operation immediately after wiring could result in unpredictable operation and hazard. Conduct energized tests with controllers and machinery stopped. Before starting work, remove static electricity in personnel, tools, and devices. Use

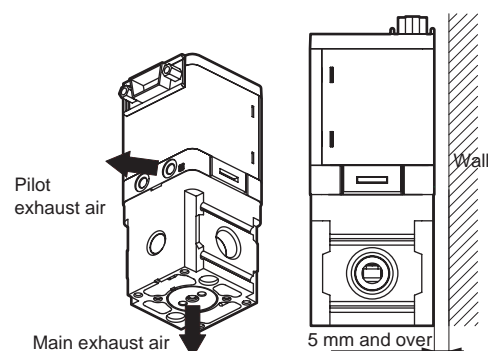
flexible wires, such as robot wires, for connection at movable sections.

- Do not use power voltage exceeding specifications. The regulator could rupture or catch fire if voltage exceeding the working range is applied or if 100 VAC power is applied.
- Short-circuiting the load could result in rupture or fire.

⚠ CAUTION

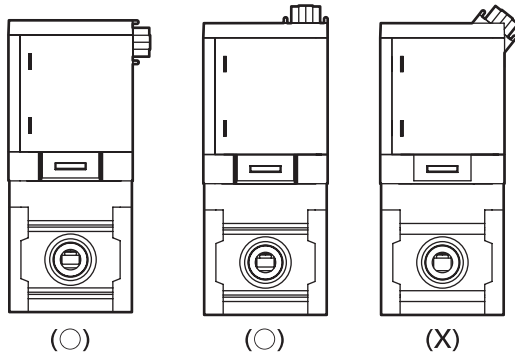
Installation

- Secure sufficient peripheral space for operating, installing, removing, wiring, and piping the product.
- Install the air filter just before the circuit using the pneumatic component.
- Install the regulator so that the exhaust port is not blocked, and secure a space required for exhaust.



Installation & Adjustment

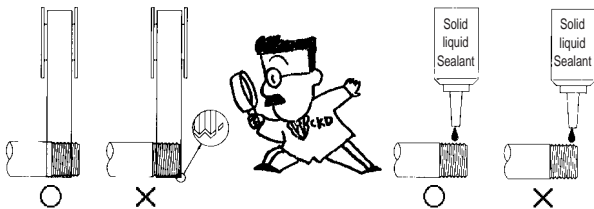
- The D-sub connector's rotator is not designed for use in moving applications. Use it at the top or side and without tilt. Fix the cable if it may move.



⚠ CAUTION

Piping

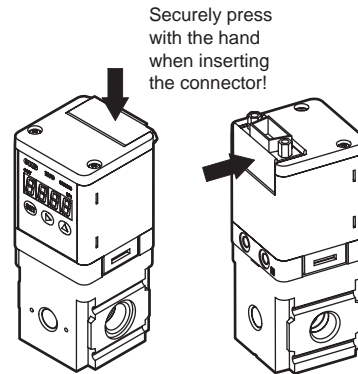
- Do not remove the port seal until just before piping the regulator.
 - Removing the port seal from the piping port before piping is started could let foreign matter enter from the piping port and result in faults or faulty operation.
- Sufficiently flush pneumatic pipes before connecting. Confirm that sealing tape does not enter piping.
- When connecting pipes, wrap sealing tape in the opposite direction from threads starting 2 mm margin from the end of piping threads.
 - If sealing tape protrudes from pipe threads, it could be cut when screwed in. This could cause the tape to enter the pneumatic components and lead to faults.



Wiring

- The optional shield cable connector is a shielded wire.
 - Insulate unused wires so they do not contact other wires, including shielded wires. Inadvertent connection to ground, etc., could result in malfunction or regulator damage.
- Securely insert and fit the D-sub connector to the back.

- The D-sub connector rotates 90 degrees. When fitting the D-sub connector, press it in by hand so that it faces the top or side.

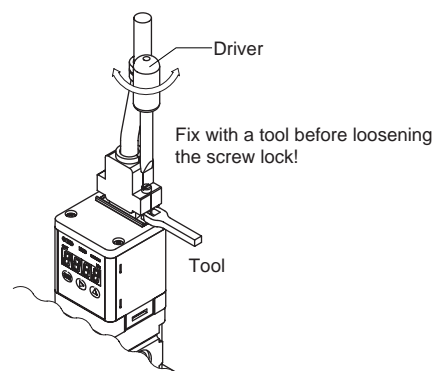


- Proper pressure control is not possible if the exhaust port is plugged. Release into the atmosphere.
- Tighten pipes with the appropriate torque.
 - Pipes must be connected with the appropriate torque to prevent air leakages and screw damage.
 - First tighten the screw by hand to prevent damage to screw threads, then use a tool.

[Recommended tightening torque]

Set screw	Tightening torque N·m
Rc1/4	6 to 8
Rc3/8	13 to 15

- When supplying compressed air for the first time after connecting pipes, do not apply high pressure suddenly.
- When supplying compressed air for the first time after connecting pipes, confirm that no air is leaking from any pipe connections.
 - Apply a leakage detection agent on pipe connections with a brush, and check for air leaks.
- Lock the D-sub connector so that it does not move. Fix the fixed bed with a tool, etc., when releasing the screw lock.



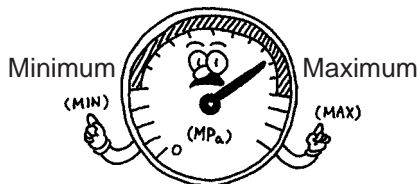
During use & Maintenance

⚠ WARNING

- Do not supply other than compressed air.
- Use clean compressed air that does not contain corrosive gas.
- Use "ISO Class 1.3.2" clean dry air from which oil has been removed.
- Before servicing the product, turn power OFF, stop the compressed air supply, and check that there is no residual pressure.
 - This is a requirement for ensuring safety.

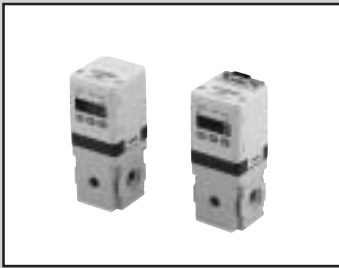
⚠ CAUTION

- Plan daily inspections and periodic inspections to ensure that maintenance is correctly controlled.
 - If maintenance is not correctly controlled, the product's functions could drop markedly and lead to a shortened life, damage, malfunctions, faults, and accidents.
1. Control of supplied compressed air pressure
 - Is the set pressure supplied? Does the pressure gauge indicate the set pressure during operation of the device?



2. Control of air filter
 - Is the drain correctly discharged?
Is the bowl or element dirty?
3. Control of compressed air leaks from piping connections
 - Is the state of the connection, especially at movable sections, normal?
Operation may be abnormal if pipes leak.
4. Control of operation
 - Are any operations delayed? Is exhaust normal?
5. Control of pneumatic actuator operation
 - Is operation smooth? Is end stop normal?
Is coupling with the load normal?

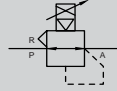
- If an abnormality occurs during operation, turn power and air pressure off immediately and stop use.
- Use this regulator within the working pressure range.
- This regulator does not start pressure control for about 2 seconds after power is turned on so it can complete self-diagnostics. Provide a control circuit and program that ignores signals for about 2 seconds after power is turned on.
- When the output setting is changed, controllers could operate accidentally. Stop devices before changing settings.
- Regularly inspect the regulator at least once a year and confirm that it is operating correctly.
- This case is made of resin. Do not use solvent, alcohol, or detergent when cleaning because resin could be damaged. Wipe off dirt with a rag dampened in a diluted neutral detergent solution.



Digital electro pneumatic regulator

EVD-1000 Series

JIS symbol



Specifications

Descriptions	EVD-1500-□08□		EVD-1500-P08□	
	Analog type		Parallel type	
Working fluid	Clean compressed air			
Max. working pressure	700kPa			
Mini. working pressure (kPa)	Set pressure+maximum control pressure X 0.2			
Withstanding pressure	Inlet side	1050 kPa		
	Output side	750 kPa		
Control pressure range	0 to 500 kPa			
Power supply voltage	24 VDC \pm 10% (stabilized power supply with ripple rate of 1% or less)			
Current consumption	0.15 A or less (0.6 A rush current when power is turned on)			
Input signal (Input impedance)	0 to 10 VDC (6.7k Ω)		10bit	
	0 to 5 VDC (10k Ω)			
	4 to 20 mADC (250 Ω)			
Preset input	8 points		None	
Output signal	Note 1	Analog output: 1-5 VDC (connected load impedance of 500 k Ω and over)		
		Switch output: NPN or PNP open collector output, 30 V or less, 50 mA or less, voltage drop of 2.4 V or less, PLC and relay compatible		
Error output signal	NPN or PNP open collector output, 30 V or less, 50 mA or less, voltage drop of 2.4 V or less, PLC and relay compatible			
Direct memory setting	5 to 500 kPa (minimum setting width 1 kPa)			
Hysteresis	Note 2	0.5% F.S. or less		
Linearity	Note 2	\pm 0.3% F.S. or less		
Resolution	Note 2	0.2% F.S. or less		
Repeatability	Note 2	0.3% F.S. or less		
Temperature characteristics	Zero point fluctuation		0.15% F.S./ $^{\circ}$ C or less	
	Span point fluctuation		0.07% F.S./ $^{\circ}$ C or less	
Max. flow rate (ANR)	Note 3	400 ℓ /min		
Step response time	Note 4	0.2sec. or less (loadless)		
Mechanical vibration proof	98 m/s ² or less			
Ambient temperature	5 to 50 $^{\circ}$ C			
Working fluid temperature	5 to 50 $^{\circ}$ C			
Port size	Rc1/4			
Installation attitude	Free			
Mass	250g			
Protective circuit	Power supply reverse connection prevention, switch output reverse connection protection, switch output load short-circuit protection			

Note 1: Select either analog or switch output.

Note 2: The above applies in control pressure 10 to 90 % with 24 VDC power voltage and working pressure set at the maximum control pressure \times 1.2 (=0.6 MPa). Pressure may fluctuate if used for applications such as blowing only when the secondary side is a closed circuit.

Note 3: The above apply when working pressure and control pressure are maximum.

Note 4: The above apply when working pressure is maximum and the step is as follows:

{	50% F.S. -> 100% F.S.
	50% F.S. -> 60% F.S.
	50% F.S. -> 40% F.S.

How to order

EVD-1 **500** - **0** **08** **AN** - **C1B1** - **3**

A Pressure specifications

B Input specifications

C Port size

D Output specifications

E Option

F Power supply voltage

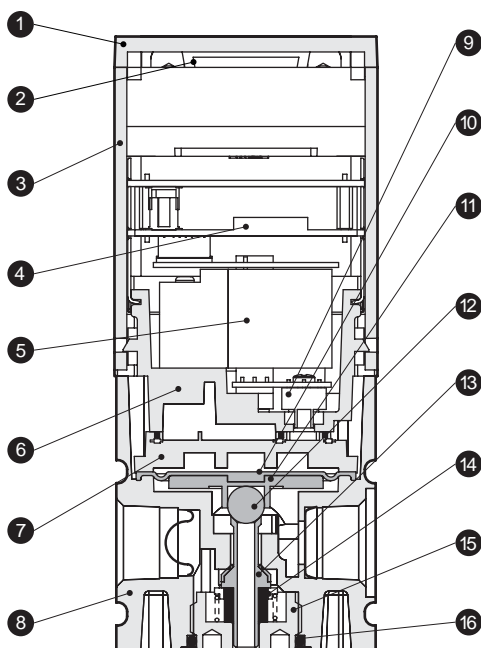
● Option (cable, bracket) part model No.

EVD- **C1**

E Option

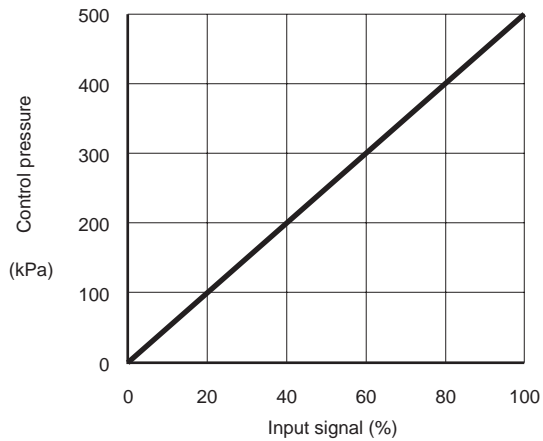
Symbol	Descriptions
A Pressure specifications	
500	500 kPa
B Input specifications	
0	0-10 VDC
1	0-5 VDC
2	4-20 mADC
P	Parallel 10bit
C Port size	
08	Rc1/4
D Output specifications	
AN	1-5V analog, error (NPN)
AP	1-5V analog, error (PNP)
SN	Switch (NPN), error (NPN)
SP	Switch (PNP), error (PNP)
E Option	
Cable option	
Blank	None
C1	Analog 9-conductor cable, 1 m
C3	Analog 9-conductor cable, 3 m
P1	Parallel 15-conductor cable, 1 m
P3	Parallel 15-conductor cable, 3 m
Bracket option	
Blank	None
B1	B type bracket, floor installation type
L1	L type bracket, wall installation type
F Power supply voltage	
3	24VDC

Internal structure and parts list

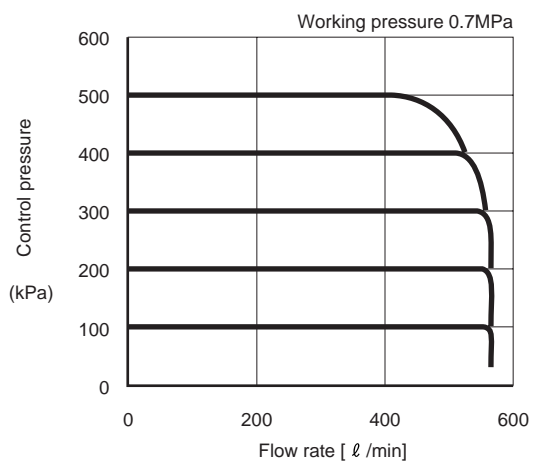


No.	Parts name	Material
1	Cover	PBT resin
2	D sub-connector	-
3	Housing	ABS resin
4	Controller circuit board	-
5	3 way valve	-
6	Valve base	Polyphenylen sulfite resin
7	Pilot chamber	Polyphenylen sulfite resin
8	Body	Aluminum alloy die casting
9	Pressure sensor	-
10	Diaphragm	Special nitrile rubber
11	Relief sheet	Aluminum alloy
12	Steel ball (exhaust valve)	SUJ
13	Valve	Special nitrile rubber and stainless steel
14	Bottom rubber	Silicon rubber
15	Bottom plug	Brass and electroless nickeling
16	O ring	Fluoro rubber

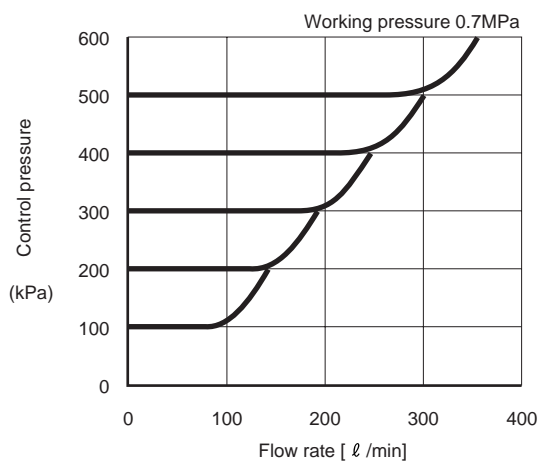
I/O characteristics

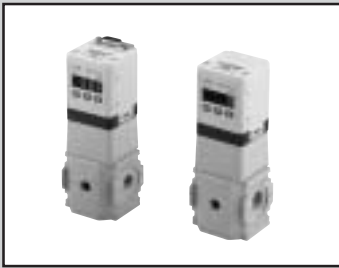


Flow characteristics



Relief characteristics

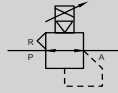




Digital electro pneumatic regulator

EVD-3000 Series

JIS symbol



Specifications

Descriptions	EVD-3500-□08□ EVD-3500-□10□		EVD-3500-P08□ EVD-3500-P10□	
	Analog type		Parallel type	
Working fluid	Clean compressed air			
Max. working pressure	700 kPa			
Min. working pressure (kPa)	Set pressure+maximum control pressure X 0.2			
Withstanding pressure	Inlet side	1050 kPa		
	Output side	750kPa		
Control pressure range	0 to 500 kPa			
Power supply voltage	24 VDC ±10% (stabilized power supply with ripple rate of 1% or less)			
Current consumption	0.15 A or less (0.6 A rush current when power turned on)			
Input signal (Input impedance)	0 to 10 VDC (6.7kΩ)		10bit	
	0 to 5 VDC (10kΩ)			
	4 to 20 mADC (250Ω)			
Preset input	8 points		None	
Output signal	Note 1	Analog output: 1-5 VDC (connected load impedance of 500 kΩ and over)		
Error output signal		Switch output: NPN or PNP open collector output, 50 mA or less, voltage drop of 2.4 V or less, PLC and relay compatible		
Direct memory setting		NPN or PNP open collector output, 50 mA or less, voltage drop of 2.4 V or less, PLC and relay compatible		
Hysteresis	Note 2	5 to 500 kPa (setting minimum width 1kPa)		
Linearity	Note 2	0.5% F.S. or less		
Resolution	Note 2	±0.3% F.S. or less		
Repeatability	Note 2	0.2% F.S. or less		
Temperature characteristics	Zero point fluctuation	0.3% F.S. or less		
	Span point fluctuation	0.07% F.S./°C or less		
Max. flow rate (ANR)	Note 3	1500 ℓ/min		
Step response time	Note 4	0.2sec. or less (loadless)		
Mechanical vibration proof		98m/s ² or less		
Ambient temperature		5 to 50 °C		
Working fluid temperature		5 to 50 °C		
Port size		Rc1/4, Rc3/8		
Installation attitude		Free		
Mass		450g		
Protective circuit		Power supply reverse connection prevention, switch output reverse connection protection, switch output load short-circuit protection		

Note 1: Select either analog or switch output.

Note 2: The above applies in control pressure 10 to 90 % with 24 VDC power voltage and working pressure set at the maximum control pressure×1.2 (=0.6 MPa).
Pressure may fluctuate if used for applications such as blowing only when the secondary side is a closed circuit.

Note 3: The above apply when working pressure and control pressure are maximum.

Note 4: The above apply when working pressure is maximum and the step is as follows:

50% F.S. ->	100% F.S.
50% F.S. ->	60% F.S.
50% F.S. ->	40% F.S.

How to order

EVD-3 **500** - **0** **08** **AN** - **C1B3** - **3**

A Pressure specifications

B Input specifications

C Port size (IN, OUT)

D Output specifications

E Option

F Power supply voltage

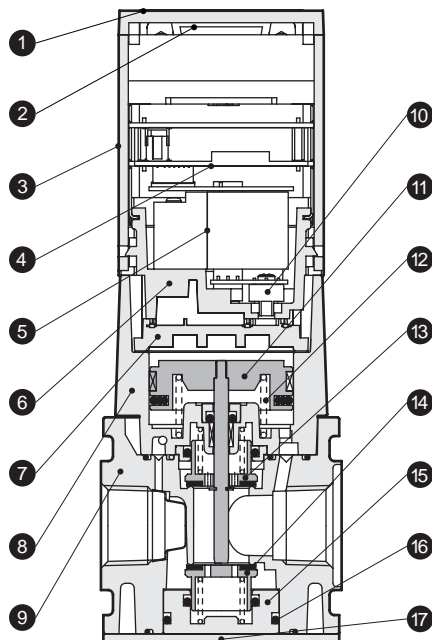
● Option (cable, bracket) part model No.

EVD- **C1**

E Option

Symbol	Descriptions
A Pressure specifications	
500	500 kPa
B Input specifications	
0	0 to 10 VDC
1	0 to 5 VDC
2	4 to 20 mA DC
P	Parallel 10bit
C Port size (IN, OUT)	
08	Rc1/4
10	Rc3/8
D Output specifications	
AN	1 to 5 V analog, error (NPN)
AP	1 to 5 V analog, error (PNP)
SN	Switch (NPN), error (NPN)
SP	Switch (PNP), error (PNP)
E Option	
Cable option	
Blank	None
C1	Analog 9-conductor cable, 1 m
C3	Analog 9-conductor cable, 3 m
P1	Parallel 15-conductor cable, 1 m
P3	Parallel 15-conductor cable, 3 m
Bracket option	
Blank	None
B3	B type bracket, floor installation type
L3	L type bracket, wall installation type
F Power supply voltage	
3	24VDC

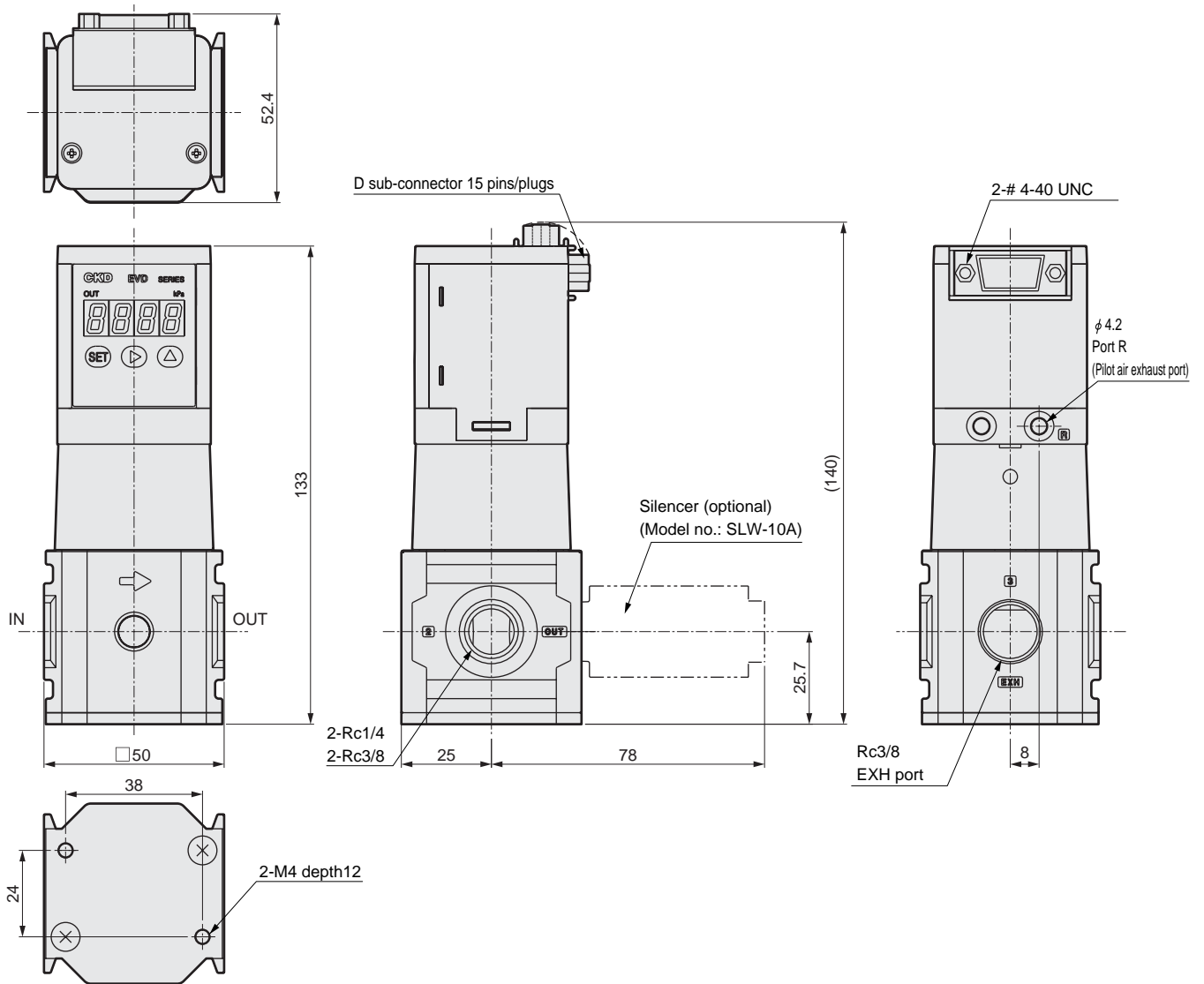
Internal structure and parts list



No.	Parts name	Material
1	Cover	PBT resin
2	D sub-connector	-
3	Housing	ABS resin
4	Controller circuit board	-
5	3 way valve	-
6	Valve base	Polyphenylen sulfite resin
7	Pilot chamber	Polyphenylen sulfite resin
8	Piston body assembly	Aluminum alloy die casting, etc.
9	Body	Aluminum alloy die casting
10	Pressure sensor	-
11	Piston assembly	Aluminum alloy and stainless steel, etc.
12	Spring	Stainless steel
13	Top valve	Special brass and nitrile rubber
14	Bottom valve	Special brass and nitrile rubber
15	Bottom cap	Brass
16	O ring	Nitrile rubber
17	Base plate	Steel sheet

EVD-3000 Series

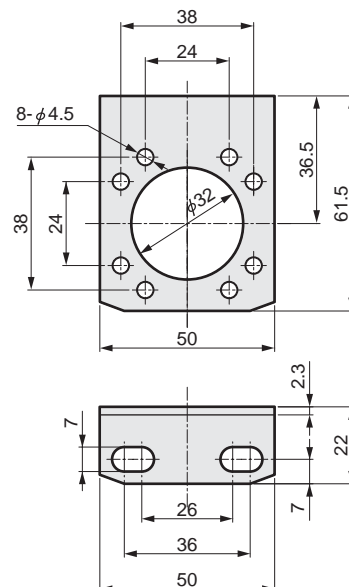
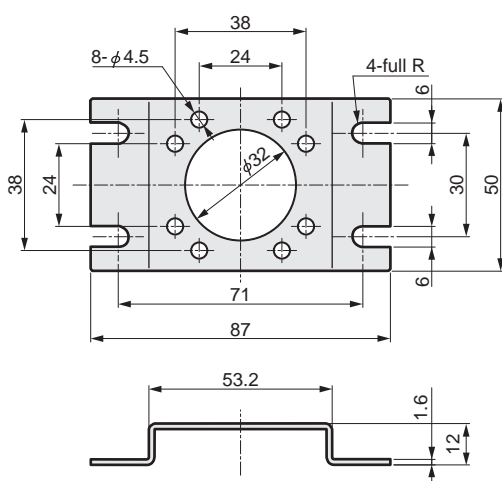
Dimensions



Option dimensions

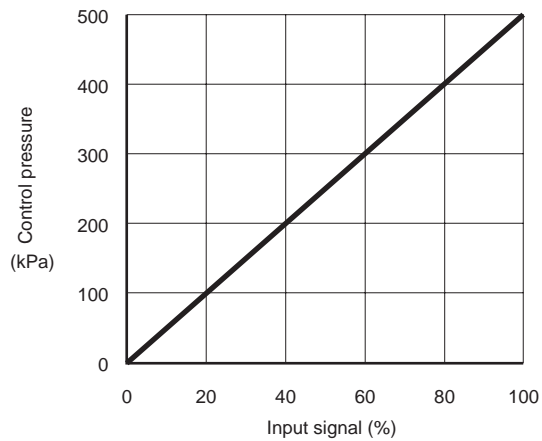
● B type bracket (-B3): floor installation type

● L type bracket (-L3): wall installation type



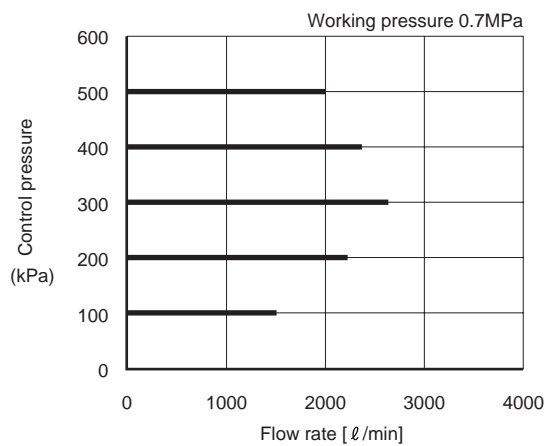
*Refer to Page 9 for cable option dimensions.

I/O characteristics

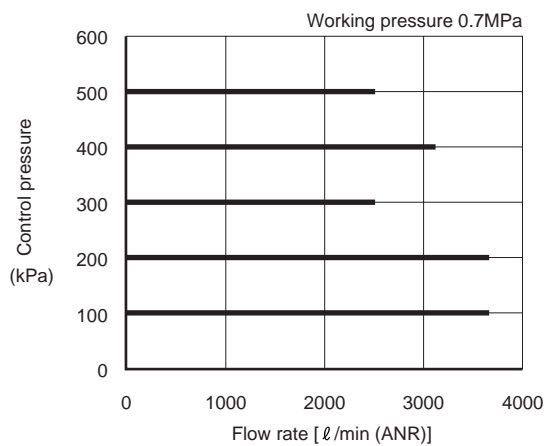


Flow characteristics

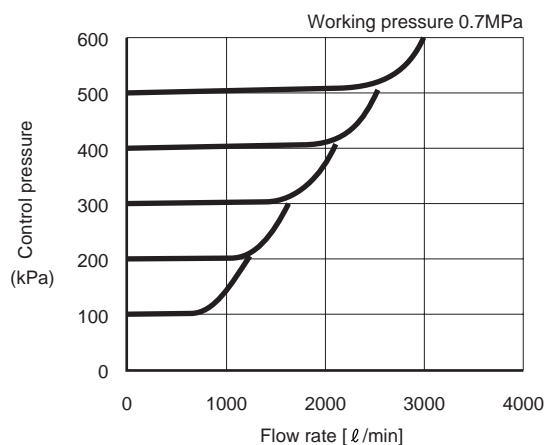
● EVD-3500-□08



● EVD-3500-□10

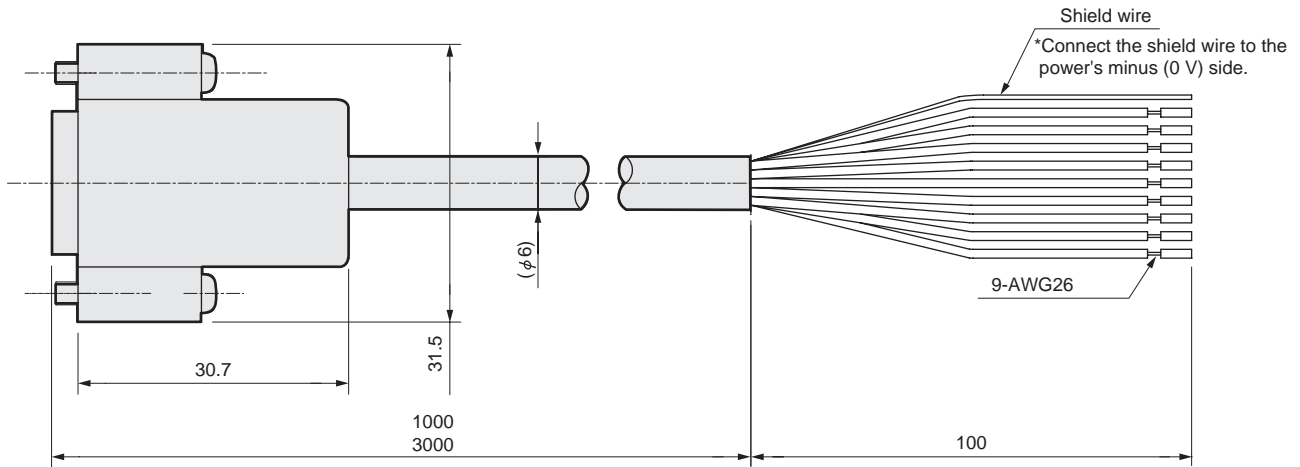


Relief characteristics



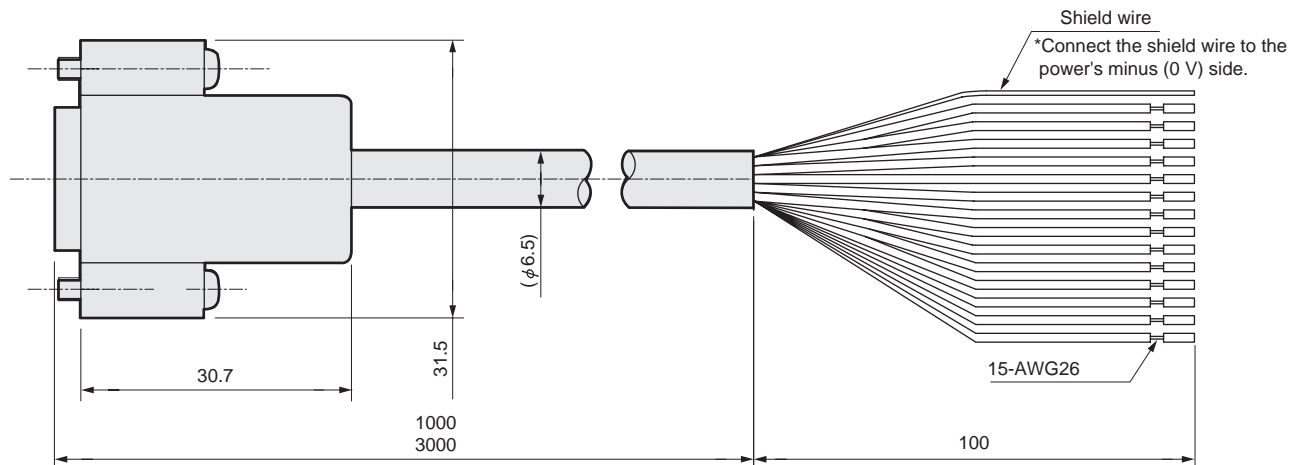
Cable option dimensions

●EVD-C1, EVD-C3



D sub socket pin no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
Isolator color	Brown	Orange	Yellow	-	Red	-	-	-	-	Gray	White	-	Green	Blue	Black			
Name	Preset input signal				Power supply+						Input signal	Vacant	Monitor output	Switch output	Error output			
Type of input	Bit 1	Bit 1	Bit 1	Vacant	+24VDC	Vacant	Vacant	Vacant	Vacant	Common	0 to 10 VDC	0 to 5 VDC	4 to 20 mADC	Vacant	Output short-circuit protection circuit 1 to 5 VDC	NPN or PNP output	NPN or PNP output	Power supply- (0V)

●EVD-P1, EVD-P3

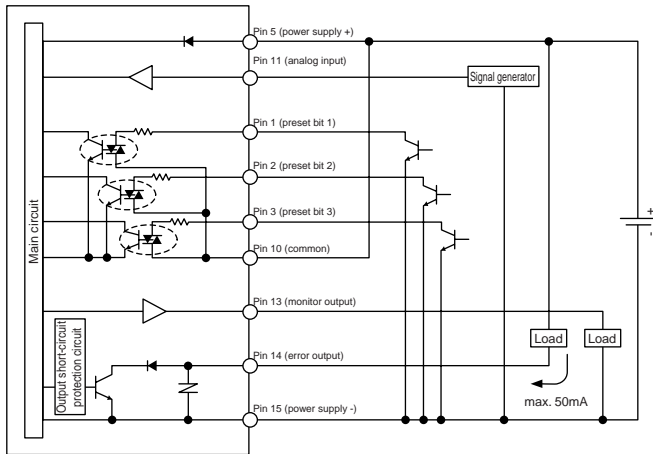


D sub Socket Pin no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Isolator color	Brown	Orange	Yellow	Purple	Red	Light blue	Pink	White (with a black line)	Red (with a black line)	Gray	White	Green (with a black line)	Green	Blue	Black	
Name	Parallel input signal				Power supply+	Parallel input signal					Parallel input signal	Monitor output	Switch output	Error output		
Type of input	Bit 1	Bit 2	Bit 3	Bit 4	+24VDC	Bit 5	Bit 6	Bit 7	Bit 8	Common	Bit 9	Bit 10	Output short-circuit protection circuit 1 to 5 VDC	NPN or PNP output	NPN or PNP output	Power supply- (0V)

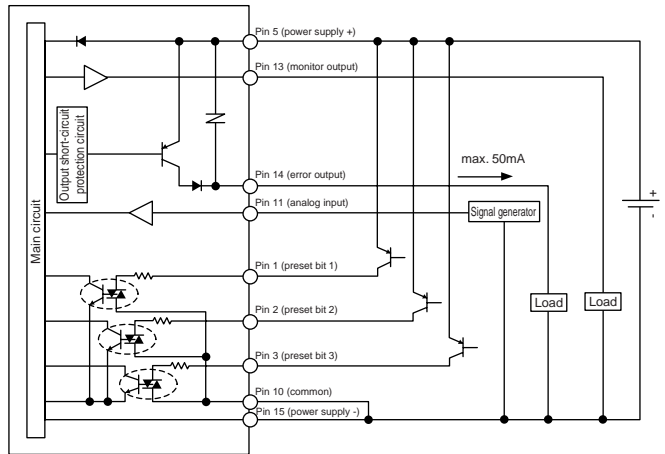
MEMO

Example of internal circuit and load connection for analog input

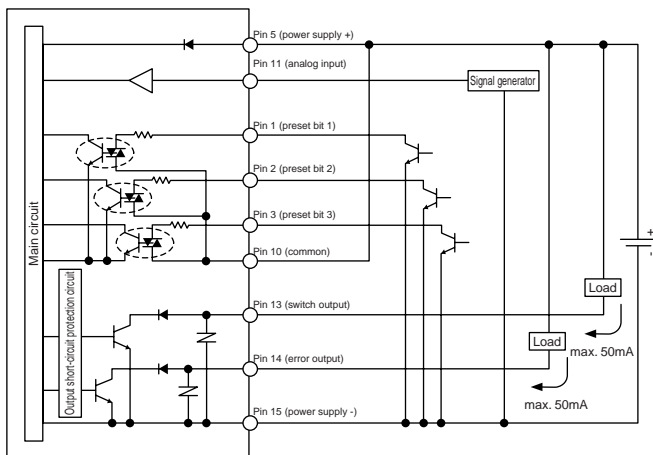
EVD-1□-0□AN-□-□, EVD-1□-1□AN-□, EVD-1□-2□AN-□
 EVD-3□-0□AN-□-□, EVD-3□-1□AN-□, EVD-3□-2□AN-□
 (Analog input, analog output + error output type, NPN output)



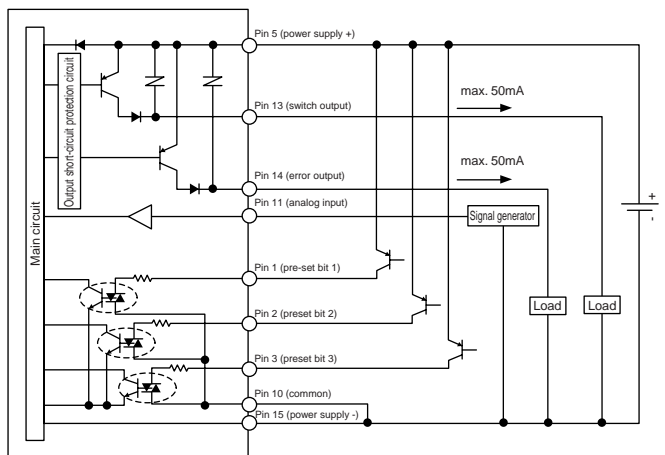
EVD-1□-0□AP-□-□, EVD-1□-1□AP-□, EVD-1□-2□AP-□
 EVD-3□-0□AP-□-□, EVD-3□-1□AP-□, EVD-3□-2□AP-□
 (Analog input, analog output + error output type, PNP output)



EVD-1□-0□SN-□-□, EVD-1□-1□SN-□, EVD-1□-2□SN-□
 EVD-3□-0□SN-□-□, EVD-3□-1□SN-□, EVD-3□-2□SN-□
 (Analog input, switch output + error output type, NPN output)

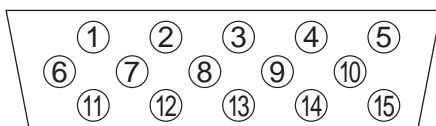


EVD-1□-0□SP-□-□, EVD-1□-1□SP-□, EVD-1□-2□SP-□
 EVD-3□-0□SP-□-□, EVD-3□-1□SP-□, EVD-3□-2□SP-□
 (Analog input, switch output + error output type, PNP output)



■ Connector pin layout (product body side)

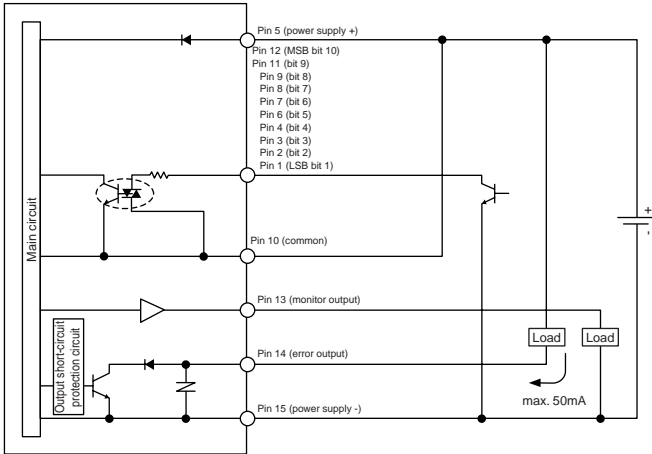
[Analog input type]



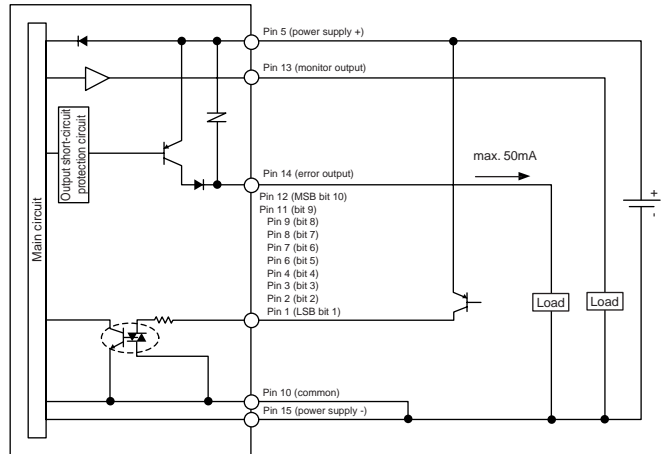
Analog input does not have ④, ⑥, ⑦, ⑧, ⑨ or ⑫ pins.

Example of internal circuit and load connection for parallel input

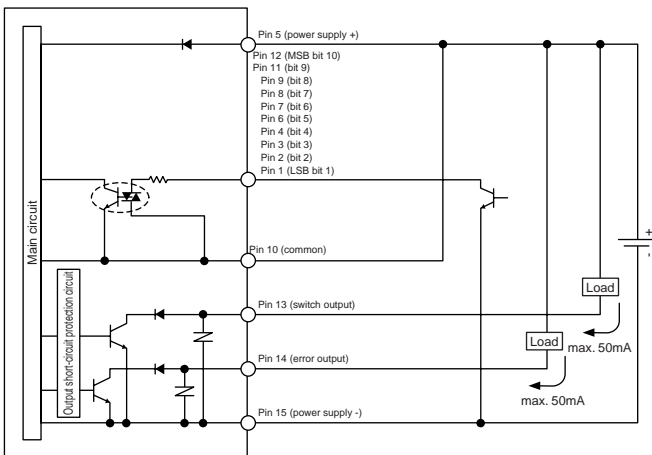
EVD-1□-P□AN-□-□
EVD-3□-P□AN-□-□
(Parallel input, analog output + error output type, NPN output)



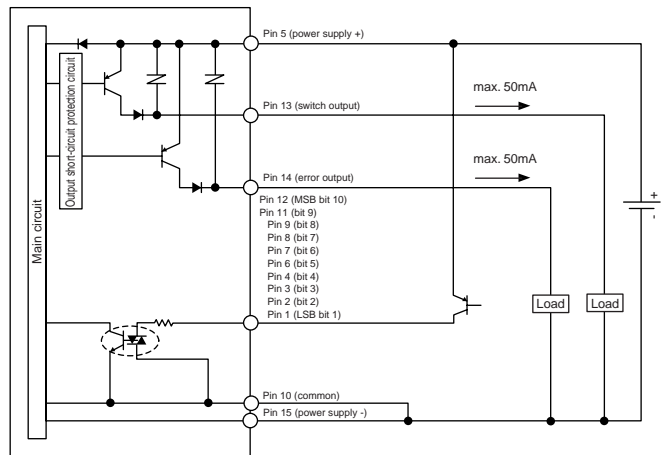
EVD-1□-P□AP-□-□
EVD-3□-P□AP-□-□
(Parallel input, analog output + error output type, PNP output)



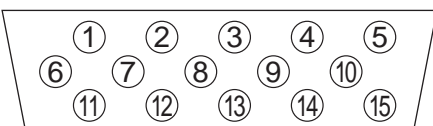
EVD-1□-P□SN-□-□
EVD-3□-P□SN-□-□
(Parallel input, switch output + error output type, NPN output)



EVD-1□-P□SP-□-□
EVD-3□-P□SP-□-□
(Parallel input, switch output + error output type, PNP output)



■ Connector pin layout (product body side)
[Parallel input type]



Names and functions of display and operation sections

Output display (red)

● "F" is displayed when confirming function setting.

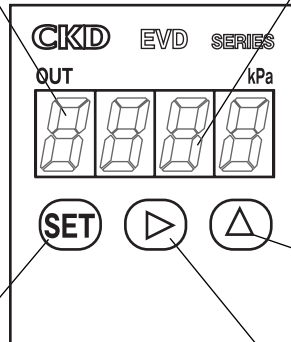
● "-" lights when the switch output is on.
(Only when using switch output specifications)
*Blinks when overcurrent is detected.

● "E" lights when error output is on.
*Blinks when overcurrent is detected.

*If there is a +/- or upper/lower limit to the function setting,
 or is displayed.

SET Key

- Use to enter setting modes
- Use to set values, etc., when entering data.



3-digit numerical LED display (green)

- Displays pressure and function setting details during RUN mode (pressure display).
*The set mode No. and set details are displayed when function setting details are displayed.
- The value, etc., is displayed when setting data.
- The error code No. is displayed when an error is output.

<Pressure display> <Set details display> <Error output>

Setting mode Setting number Setting method Code no.

△ Key

- Setting details are sequentially displayed during RUN mode (pressure display).
- Use to select the setting item when setting data.
- Use to count up the value, etc., when setting data.

▶ Key

- Use to select the digit of the value, etc., when setting data.

Function list

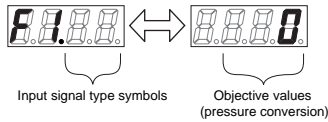
Screen display	Name	Display descriptions (RUN mode)	Setting descriptions (setting mode)	Setting method
	Pressure display	Secondary pressure is confirmed with the 3-digit numerical display LED. Unit: kPa		
 Screen F1 	Input signal selection	The selected input signal and current target value (pressure conversion value) are confirmed. *When preset input (8-point) is selected, the currently selected preset No. and setting are displayed.	For analog input type: analog input, preset memory input, or direct memory input is selected. For preset input/direct memory input, input the setting for this mode. For parallel input: parallel input or direct memory input is selected. For direct memory input, input the setting for this mode.	P15
 Screen F2 	Zero/span adjustment	The validity of the zero/span adjustment and the setting value is confirmed. When "valid", F2.on - zero point adjustment (L) and span point adjustment (H) are alternately display. *The default is set with the full scale (- -).	Select whether to use with the full scale or with the zero and span adjusted. When zero/span adjustment is selected, the adjustment for this mode is set randomly.	P16
 Screen F3 	Automatic power off	The validity of the automatic power off function is confirmed. *The default is invalid (- -).	The validity of the automatic power off function is selected. Note: The automatic power off time is about 1 minute, and cannot be changed.	P16
 Screen F4 	Switch output *Switch output specifications only	Switch output validity and setting are confirmed. When "Mode 1 valid" is selected, F4.0 - tolerable range setting (L) - + tolerable range setting (H) is alternately displayed. When "Mode 2 valid" is selected, F4.1 - lower limit setting value (L) - upper limit setting value (H) will alternately display. *The default is invalid (- -).	Switch output validity is selected. When valid, mode 1 or mode 2 can be selected. The +/- tolerable values and upper/lower limit values can be set randomly. Note: The hysteresis width cannot be set.	P16

How to operate

RUN mode Display descriptions table

■ F1 (input signal selection) Screen F1 display details

The input signal type and target value are alternately displayed.



<Analog input type>

EVD-□-0□□-□-□, EVD-□-□□-□-□, EVD-□-2□□-□-□

Input signal type symbols	Descriptions
	Analog 0 to 10 VDC input
	Analog 0 to 5 VDC input
	Analog 4 to 20 mA DC input
	Preset memory input Selected preset no. is displayed.
	Direct memory input

<Digital input type>

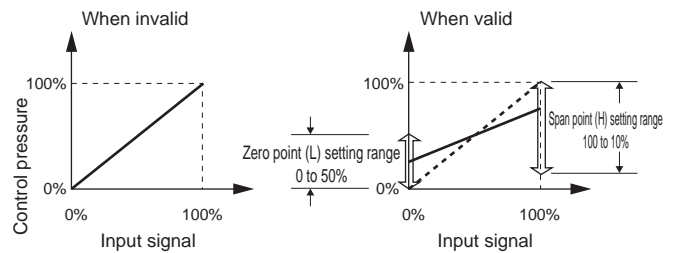
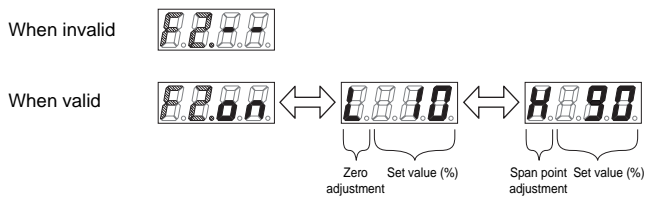
EVD-□-P□□-□-□

Input signal type symbols	Descriptions
	Parallel 10bit input
	Direct memory input

■ F2 (Zero/span adjustment function) Screen F2 display details

The validity of zero/span adjustment and the setting are confirmed.

Note: This is invalid if preset or direct memory input is selected for F1 mode.



■ F3 (automatic power off) Screen F3 display details

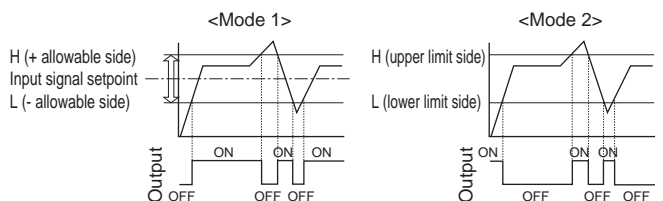
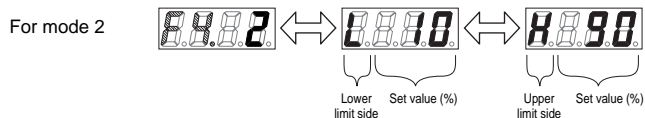
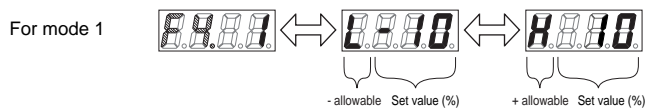
The validity of automatic power off is confirmed.



■ F4 (switch output function) Screen F4 display details

Switch output validity and setting are confirmed.

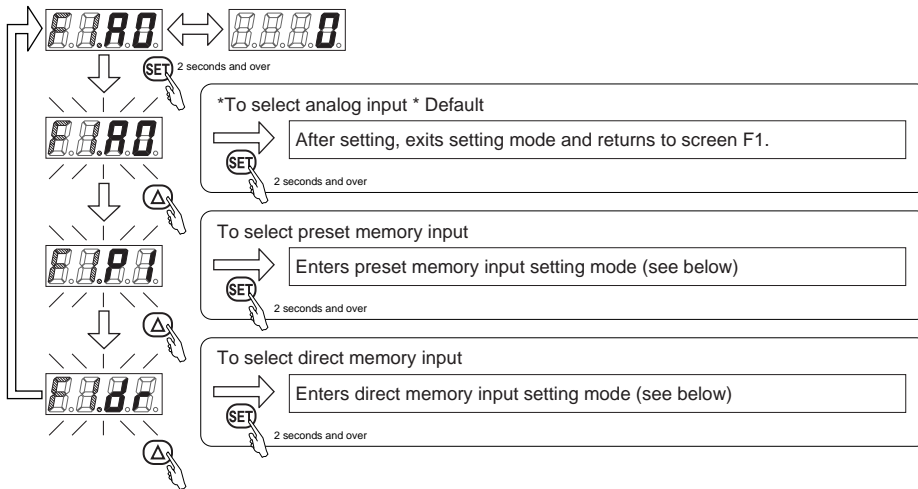
Note: This is invalid with analog output specifications.



Setting mode Setting method Caution Release the key lock before changing setting details. (Refer to page 17)

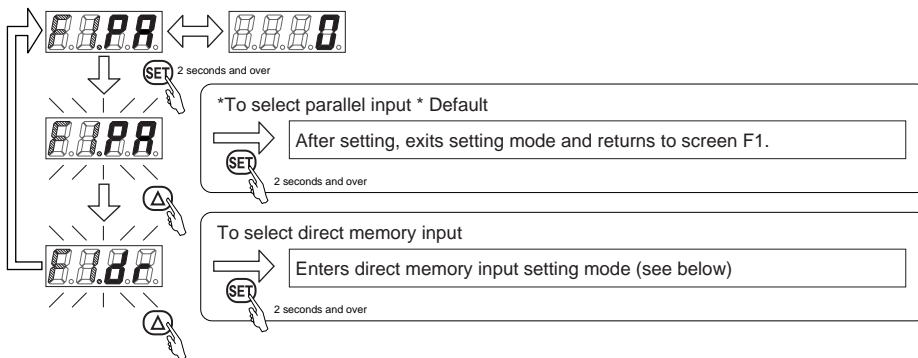
■ Hold down the SET key for 2 seconds or longer with the F1 (input signal selection) screen F1 displayed. The F1 setting mode is entered.

- Changing analog input signal selection
Note: Analog input specifications cannot be changed.



Exits input signal selection setting mode, and returns to screen F1.

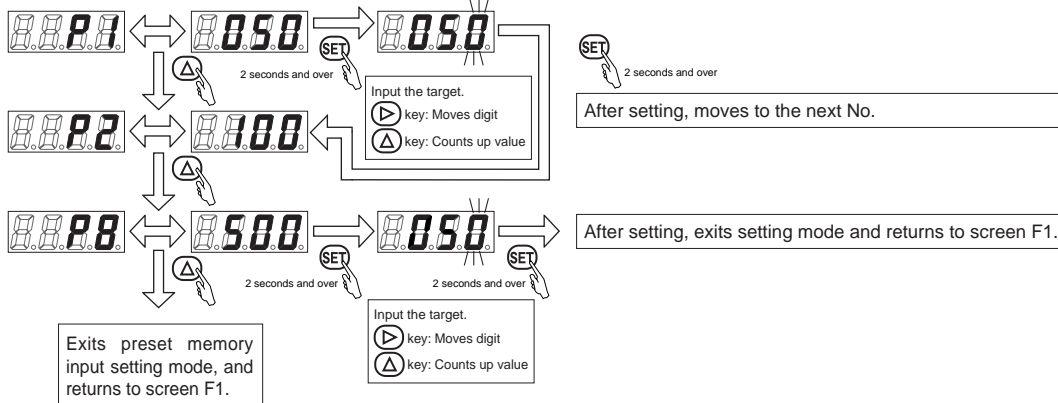
- Changing parallel input signal selection



Exits input signal selection setting mode, and returns to screen F1.

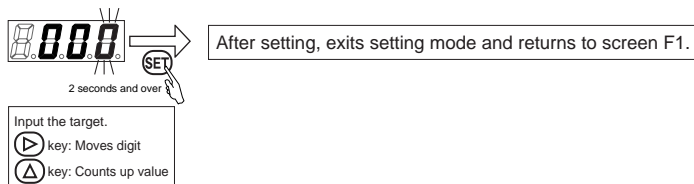
- Using preset memory input setting mode

*Hold down the SET key for 2 seconds or longer with screen F1 preset memory input displayed.



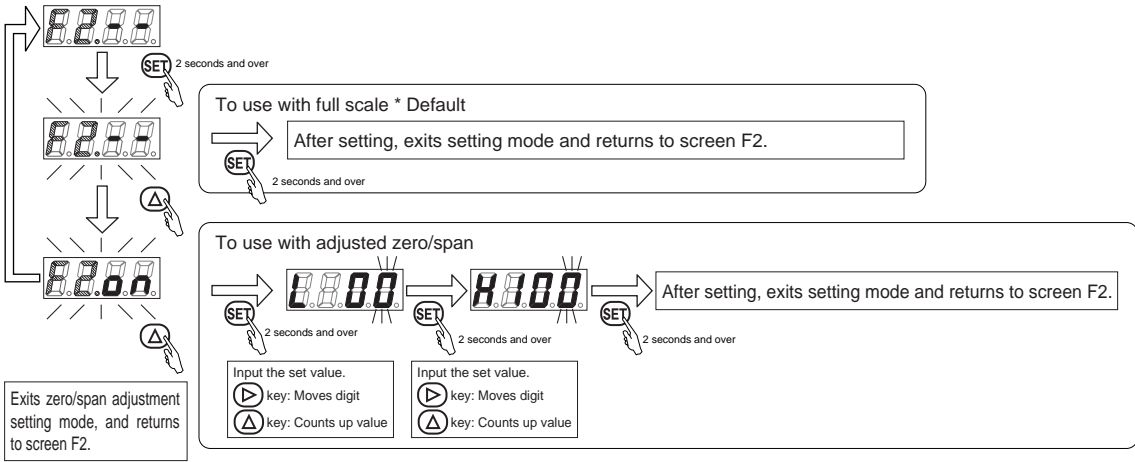
- Using direct memory input setting mode

*Hold down the SET key for 2 seconds or longer with screen F1 direct memory input displayed.



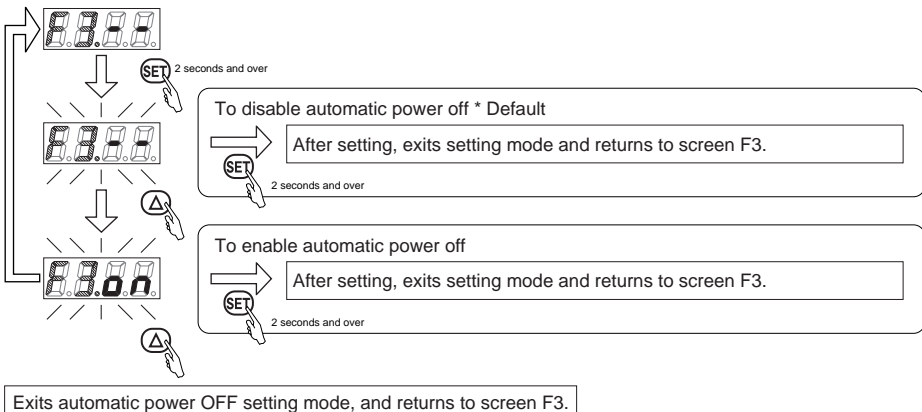
Setting mode Setting method Caution Release the key lock before changing setting details.(Refer to page 17)

■ Hold down the SET key for 2 seconds or longer with screen F2 (zero/span adjustment) screen F2 displayed. F2 setting mode is entered.



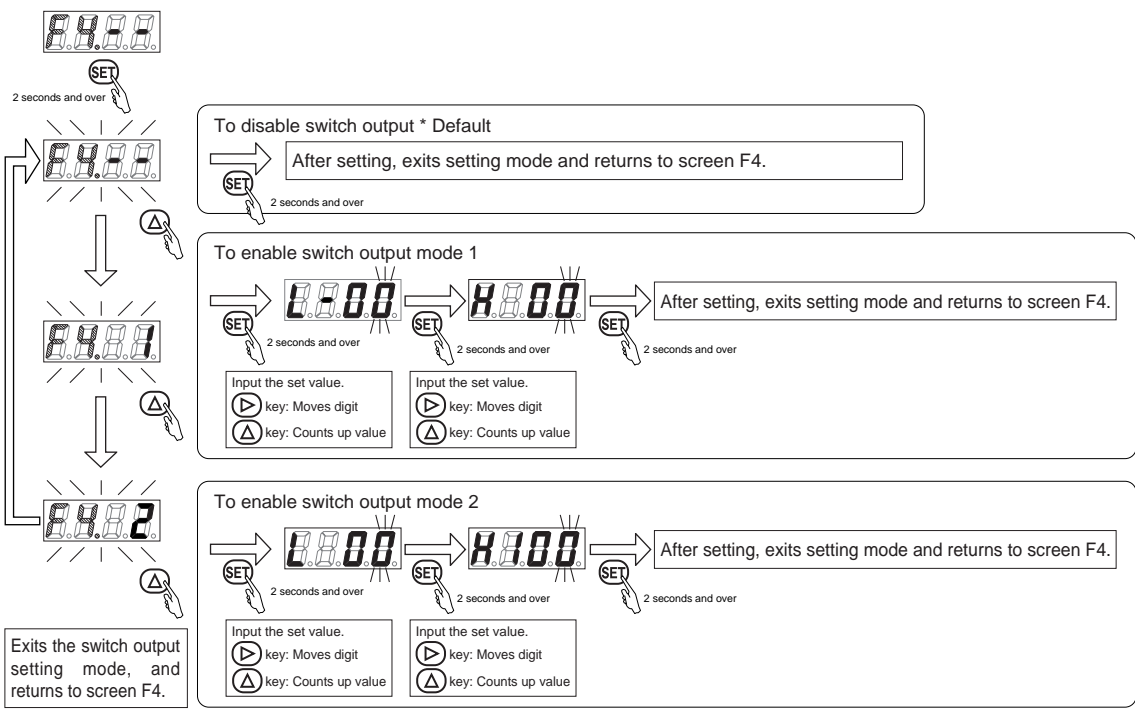
*This function cannot be used when preset or direct memory input is selected with F1 (input signal selection). Only full scale is used.

■ Hold down the SET key for 2 seconds or longer with screen F3 (automatic power off) screen F3 displayed. The F3 setting mode will be entered.



*If a key is pressed during automatic power off, the display will turn on.
*The automatic power off time is set to about 1 minute, and cannot be changed.

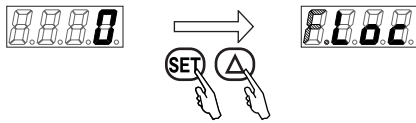
■ Hold down the SET key for 2 seconds or longer in with screen F4 (switch output function) screen F4 displayed. F4 setting mode is entered.



Key lock

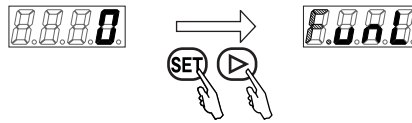
This prevents incorrect operation. Release the key lock before changing settings.

● Operating the key lock



Hold down simultaneously for 2 seconds or longer

● Releasing the key lock



Hold down simultaneously for 2 seconds or longer

*The key is locked when power is turned on or turned on again.

Setting range of each function

Function	Setting display screen	Setting descriptions	Setting specifications
F1: Input signal selection For preset memory input 		Set the target pressure	Note 1 Range: 000 to 500 Minimum setting: 1 kPa
F1: Input signal selection For direct memory input 		Set the target pressure	Note 1 Range: 000 to 500 Minimum setting: 1 kPa
F2: zero/span adjustment function 		Set zero point adjustment.	Note 2 Range: 00 to 50 Minimum setting: 1%
		Set span point adjustment.	Note 2 Range: 100 to 010 Minimum setting: 1%
F4: switch output function For mode 1 		Set the - tolerable value.	Range: -00 to -50 Minimum setting: -1%
		Set the + tolerable value.	Range: 00 to 50 Minimum setting: 1%
F4: switch output function For mode 2 		Set the lower limit value.	Note 2 Range: 00 to 90 Minimum setting: 1%
		Set the upper limit value.	Note 2 Range: 100 to 010 Minimum setting: 1%

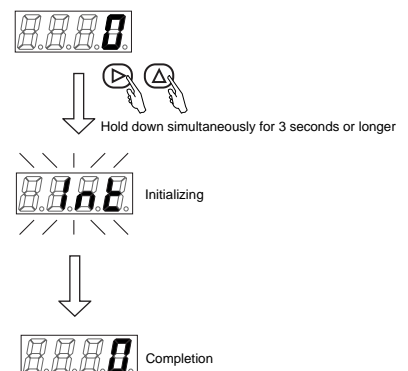
Note 1: If set to 5 kPa or less, it may not be possible to control pressure due to the effect of residual pressure.

Note 2: The setting range may be limited depending on the setting.







Default mode settings (initialization)

Screen display	Name	Setting display	Setting descriptions
Screen F1 	Input signal selection	Analog type Parallel type A0.A1.A2	Analog/parallel input
Screen F2 	Zero/span adjustment		Full scale (Zero/span adjustment invalid)
Screen F3 	Automatic power off		Automatic power off invalid
Screen F4 	Switch output *Switch output specifications only		Switch output invalid

Initialization



Error code

Error display	Cause	Measures
	Power voltage not within the rating.	Check regulator power specifications, set power voltage within the rated range, and turn power on again.
	Input signal exceeded rating.	Check the regulator's input signal, set the input signal within the rated range, and turn power on again.
	An error occurred during EEPROM reading or writing.	Contact your nearest CKD branch or dealer.
	An error occurred during memory reading or writing.	Contact your nearest CKD branch or dealer.
	Secondary pressure did not reach the set value for five or seconds or more.	Check primary pressure, supply pressure within the rating, and turn power on again. Check that there are no leaks from pipes, joints or other devices. Correctly connect, and turn power on again. If the error is not resolved, contact your nearest CKD branch or dealer.
	The switch output's overcurrent protection circuit has functioned.	Check whether load current exceeds the rating. Correctly connect, and turn power on again.

If the above errors occur, errors are displayed and error output turns on.

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