



To Use This Product Safely

Be sure to read this before use. Refer to Intro 27 for general precautions.

Individual Precautions : Digital Electro-Pneumatic Regulators EVD Series

Design / Selection

WARNING

- Design pneumatic circuits understanding the characteristics of compressed air.
 - The same functions as mechanical, hydraulic and electrical methods cannot be anticipated.
 - The product cannot be used for immediate stopping and holding in case of emergency stop.
 - Due to the compressibility and expandability characteristics of air, phenomena such as ejection, jetting, and leakage can occur.
 - Design the circuit so that compressed air in the system is exhausted.

- Confirm that the product can withstand the operating environment before use.
 - This product cannot be used in an atmosphere containing corrosive gas, chemical liquids, solvents, water or steam. If water, oil, or metal chips (spatter or cutting chips, etc.) could come in contact with the product, provide appropriate protection.
 - A gauge pressure sensor is built in. To protect the sensor, do not seal the product, and make sure that air can be introduced.
 - This product cannot be used in an explosive gas atmosphere.

- Pay attention to the electric circuit during emergency stop and to the cylinder operation during power outages.

- Install a "pressure switch" and "residual pressure exhaust valve" on the device's compressed air supply side.
 - The pressure switch disables operation if set pressure cannot be reached. The residual pressure exhaust valve releases compressed air into the pneumatic pressure circuit to prevent accidents caused by pneumatic components operation under residual pressure.

- If the primary pressure is left applied while the power is OFF, the secondary pressure may rise to the primary pressure. Due to the structure, a small amount of air is consumed from the EXH port when the secondary pressure is generated. Set the primary Regulators to 0 or use a valve on the primary side to shut off the supply source when not using the regulator.

CAUTION

- Clearly state the maintenance conditions in the equipment's instruction manual.
 - Depending on the usage conditions, operating environment, and maintenance, the product's functionality may significantly deteriorate, and safety may not be ensured. Proper maintenance allows the product to fully demonstrate its functions.
 1. Control of supplied compressed air pressure
 2. Control of pneumatic filter
 3. Control of compressed air leakage at piping connections
 4. Operational status contro
 5. Control of current consumption

- Use a constant voltage power supply.

- Check for leakage current to avoid malfunction due to leakage current from other control devices.
 - When using a programmable controller, etc., leakage current may affect the electro pneumatic regulator and cause malfunction.

For 24 VDC	1.8 mA or less
------------	----------------

- Responsiveness is affected by the Operating pressure and load volume. Also fluctuation of the Operating pressure affects the secondary side control pressure. If stable reproducibility is required, stabilize the Operating pressure by installing a regulator in the preceding stage.

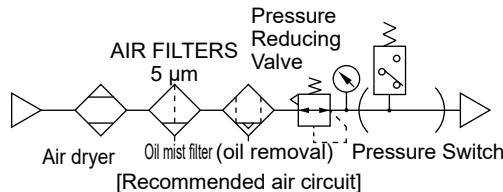
- Take the following measures to avoid malfunction due to noise.
 - Install a line filter in the AC power supply line.
 - Use a surge suppressor such as a CR or diode on the inductive load (solenoid valve, relay, etc.) and remove noise from the source.
 - Keep wiring to components separate from strong magnetic fields.
 - Connect wiring to components with a shield wire.
 - Ground the shield wire on the power supply side.
 - Keep the power supply cable as short as possible.
 - Do not share power with an inverter or components causing motor noise, etc.
 - Do not lay the power wire, signal wire, and other power cables in parallel.

- For current input type, the power supply ground and signal common are common in wiring.
 - When driving several electro pneumatic regulators with one PLC and D/A unit, depending on the D/A unit circuit, wiring could prevent the correct signal from being input. Contact the PLC manufacturer.

- The current input type can be used with an input signal of 1-5 V. However, because input impedance is small (250 Ω) when compared to other voltage input types, use an appropriate voltage generator.

- Poor air quality will cause poor characteristics and adversely affect the durability.

- Use clean dry air of ISO 8573-1 : 2010 [1 : 3 : 2] or equivalent.
 - For the pneumatic source, always supply clean air, from which solids, moisture and oils have been sufficiently removed with a dryer, Air Filters and oil mist filter. Do not use lubricated air as it will adversely affect the characteristics.



- When the secondary pressure is lowered with an input signal, etc., the secondary air passes through the product and is discharged from the EXH port. Contamination on the secondary piping and on the inside of the load will have an adverse effect on the characteristics, etc., Thus, keep the inside of the piping as clean as possible.
- If the power is turned off in a pressurized state, the secondary pressure is held.
 - To discharge pressure, lower set pressure with an input signal and then turn OFF, or use a residual pressure exhaust valve, etc. Also, this holding state does not guarantee long-term holding.

- Primary pressure :
 - Pressure specification : For 100 kPa, make sure that the pressure is not less than the "set pressure +50 kPa".
 - Pressure specification : For 500/900 kPa, make sure that the pressure is not less than the "set pressure + 100 kPa".
 - Product life is shortened if primary pressure is not supplied for a long period while power is ON. Avoid this type of usage.

- When using by opening the secondary control pressure to the atmosphere like air blowing, pressure fluctuation may occur depending on piping conditions and blowing conditions. Please test under actual usage conditions or contact us.

- When selecting the dryer, Air Filters, oil mist filter or Regulators, select a device with a flow rate higher than that used by proportional pressure controls.

- About Operating Environment
Do not use the product where the product is exposed to direct sunlight or may come in contact with water, oil, etc. The product cannot be used with large temperature variations or high temperature/humidity since condensation may occur inside the body. Consult with CKD on specifications for use outside the designated specifications or for special applications.

- Drip-proof environment
The degree of protection of this product is equivalent to IP40. Do not install in locations with moisture, salt, dust, cutting chips, or under pressurized/depressurized environments. Cannot be used in locations with rapid temperature changes or high humidity environments as condensation inside the main unit may cause problems.

- Apply a signal to offset the residual pressure (1 % F.S. or equivalent) in the waiting status where the input signal is set to 0 kPa. If an offset signal is not applied, unnecessary operation of the solenoid valve will occur, resulting in a shorter service life.

- Even when pressure is set to 0 kPa, secondary pressure is not released and remains as is within the max. control pressure range of 1 % F.S. or less. If OkPa is required, bleed the secondary side or install a 3-way valve on the secondary side to switch to atmosphere, etc.

- Depending on the piping and load conditions, the control pressure of this product may not be stable, resulting in an oscillatory state in which the pressure repeatedly rises and falls. If that condition continues, the product life will be shortened, so be sure to review piping conditions, etc.

- The processing performance of EVD-1000 Series is intended for small control targets. Status If pressure rises and falls frequently with large secondary side payload or with long piping to the control target, reducing the pressure will take a long time and the service life may become shorter since load is applied to the diaphragm and other exhaust side components. In these applications, use EVD-3000 Series with higher supply and exhaust port performance.

- This product has moving parts in its operation structure, and characteristics such as accuracy will change over time. Before use, evaluate as a system, and depending on operation frequency, take measures such as using it as a regular maintenance part.

- For this product, the warranty period is 1 year or 3 million repetitive operations, whichever comes first, so please use this as a guide for inspection.
* The conditions for 3 million operations defined in the warranty period are as follows. When repeatedly applying a step input signal where the control pressure goes from zero to the maximum control pressure. The Operating air quality in this case shall be clean compressed air from the recommended air circuit. The secondary side payload shall be 300 cm³.

- Operating conditions for CE compliance
This product is a CE compliant product adapted to the EMC Directive. The harmonized standard regarding immunity applied to this product is EN61000-6-2, but the following conditions are mandatory for compliance with this standard.
Condition
 - The evaluation of this product is performed by using a cable that has a power supply line and a signal line paired to assess the product's performance.
 - This product is not equipped with surge protection. Implement surge protection measures on the system side.

- Description of items regarding UL
Note the following when using this product in compliance with UL/ULc standards.
 - Temperature rating Max 50 °C
 - Use Class 2 power supply.

UL File No.	UL Standard	Description
E339318	UL 508	Industrial Control Equipment

MEMO

For precautions regarding mounting, installation, adjustment, operation, and maintenance, please refer to the CKD Components Product Site (<https://www.ckd.co.jp/kiki/en/>) → 'model No.' → Instruction Manual.