

Discontinue

Electro-pneumatic regulator (nozzle flapper method)



# ER100 Series

Variable controlling air pressure with electric signals (0 to 10V DC / 4 to 20mA DC) up to 0.69MPa. Booster relay integrated and large flow rate.

JIS symbol



## Specifications

### Overview

This electro pneumatic regulator ER100 series controls air pressure constantly with electric signals. This eliminates bothering works such as manual pressure adjustment, multistage pressure switching with combining several regulators and valves, etc. Changing input of voltage / current, the air pressure can be ideally controlled to achieve remote control or FA in pneumatic circuits.

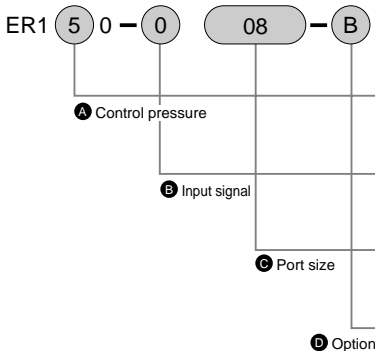
### Features

- **Compact**  
Compact major dimensions with □ 63 X 140. Space saving.
- **High precision control**  
Shown in linearity  $\pm 1.5\%$ F.S. and hysteresis 3%F.S., accurate pneumatic control is enabled.
- **Easy maintenance**  
Fixed orifice and filter integrated.
- **Wide adjusting range**  
0 and span points can be adjusted within wide range.

Descriptions		ER150	ER170
Working fluid		Clean compressed air (refer to Page 491 for air circuit. )	
Working pressure range		0.39 to 0.78MPa (control pressure +0.1MPa )	
Control pressure range		0.01 to 0.49MPa	0.01 to 0.69MPa
Input signal	Voltage	Input voltage range 0 to 10V DC	
	2 wire	Input impedance 500Ω	400Ω
	Current	Input current range 4 to 20mA DC	—
	2 wire	Input impedance 250Ω	—
Linearity		$\pm 1.5\%$ F.S. or less	
Hysteresis		3%F.S. or less Note 1	
Max. flow rate (ANR)		1500 ℓ/min	
Air consumption (ANR)		15 ℓ /min or less	20 ℓ /min or less
Step response time		0.8sec or less (loadless)	
Working temperature		5 to 50 °C	
Mechanical vibration proof		2m/S <sup>2</sup> or less (10Hz)	
Port size		Rc1/4, 3/8	
Mass		1.5kg	

Note 1: Limited to the closed circuit in the secondary side, and the pressure may vary if used as air blow, etc.

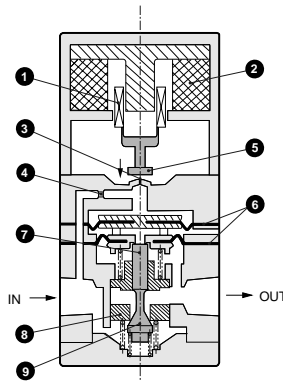
## How to order



Symbol	Descriptions
<b>A Control pressure</b>	
5	0.01 to 0.49MPa
7	0.01 to 0.69MPa
<b>B Input signal</b>	
0	0 to 10V DC
2	4 to 20mA DC (control pressure "5" 0.01 to 0.49MPa only )
<b>C Port size</b>	
08	Rc1/4
10	Rc3/8
<b>D Option</b>	
B	Bracket attached *

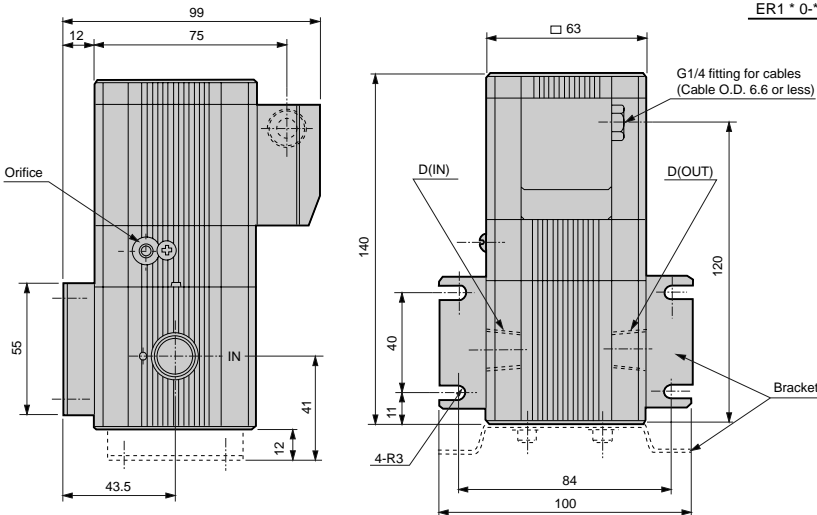
\*Part No. for bracket is ER100-B.

#### Internal structure and parts list



No.	Parts name	Material	No.	Parts name	Material
1	Coil		6	Diaphragm	Special nitrile rubber
2	Permanent magnet		7	Relief valve	Special nitrile rubber
3	Nozzle	Stainless steel	8	Main valve	Brass
4	Orifice	Brass	9	Valve stem	Stainless steel
5	Flapper	Aluminum			

#### Dimensions

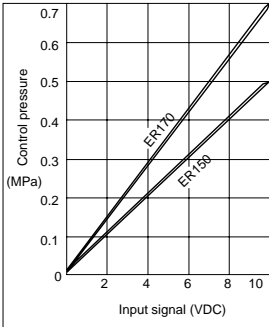


Symbol	D
Model no.	
ER1 * 0-* 08	Rc1/4
ER1 * 0-* 10	Rc3/8

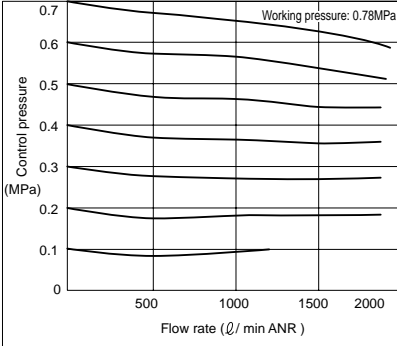
Note: Install the electro pneumatic regulator vertically (facing coil section top). For other installation attitudes, 0 and span points must be adjusted again.

Refrigerating type dryer  
 Desiccant type dryer  
 High polymer membrane dryer  
 Air filter  
 Automatic drain other  
 F.R.L (Module)  
 F.R.L (Separate)  
 Small F.R.  
 Precise R.  
 Electro pneumatic R.  
 Auxiliary  
 Flow control valve  
 Silencer  
 Check valve / others  
 Joint / tube  
 Vacuum F.  
 Vacuum R.  
 Vacuum generator  
 Vacuum auxiliary / pad  
 Mechanical pressure SW  
 Electronic pressure SW  
 Electronic dif. pres. SW  
 Seating / close contact conf. SW  
 Pressure SW for coolant  
 Flow sensor for air  
 Total air system  
 Water cooling refrigerator  
 Flow sensor for water  
**F.R.L. unit**  
**Electro pneumatic regulator**

I/O characteristics



Flow characteristics



# Discontinue

Electronic pneumatic regulator (nozzle flapper method / large flow rate)



## ER300 Series

A piezoelectric element and semiconductor pressure sensor are used to achieve precise air pressure control. Pressure monitor is also possible.

JIS symbol



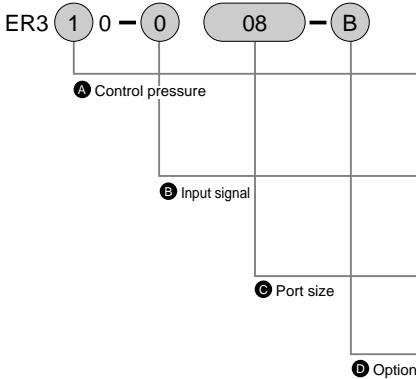
### Overview

In electronic pneumatic regulator ER300 series, piezoelectric elements and semiconductor pressure sensors are used to control precise and constant air pressure with electric signals.

### Features

- New raw material**  
 Piezoelectric element (piezoelectric element) is used for nozzle flapper to improve resistance to mechanical vibration.
- Feedback control method**  
 Feedback control method with semiconductor pressure sensor and electronic circuit is used to achieve precise and outstanding temperature characteristics and stability.
- Common exhaust method**  
 Very small air consumption (1/3 of conventionals) and low operation cost. Common exhaust method eliminates environmental contaminations.
- Large flow rate type**  
 Max. flow rate is 2500 ℓ/min (standard state) for ER380. Large relief flow also allows to control large load easily.
- Pressure monitor available.**  
 Pressure monitor terminal integrated. (voltage input type only)

### How to order



### Specifications

Descriptions	ER310	ER350	ER380
Working fluid	Clean compressed air (refer to Page 492 for air circuit.)		
Working pressure range	150 to 200kPa	0.54 to 0.59MPa	0.83 to 0.88MPa
Control pressure range	0 to 98kPa	0 to 0.49MPa	0 to 0.78MPa
Input signal	Voltage Input voltage	0 to 10V DC 0 to 5V DC	
	3 wire Input impedance	10kΩ	
	Current Input current	4 to 20mA DC (power supply not required)	
	2 wire Input impedance	500Ω or less	
Power voltage	11 to 16V DC (ripple ratio 1% or less, safety power supply)		
Current consumption	10mA or less (3 wire)		
Linearity	± 0.5%F.S. or less Note 1		
Hysteresis	1.0%F.S. or less Note 1		
Max. flow rate (ANR)	700 ℓ/min	2000 ℓ/min	2500 ℓ/min
Air consumption (ANR)	3 ℓ/min or less		
Step response time	2sec. or less (loadless)		
Working temperature	5 to 50 °C		
Monitor output	Refer to Page 507 characteristic chart. Note 2		
Mechanical vibration proof	39m/S <sup>2</sup> or less (30Hz)		
Port size	Rc1/4, 3/8		
Mass	0.9kg		

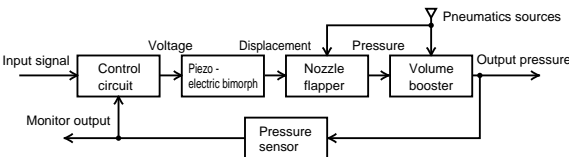
Note 1: Characteristics where control pressure range is 10 to 100%. Limited to a closed circuit in the secondary side, and the pressure may vary if used as air blow, etc.

Note 2: Monitor output function is provided only for voltage input type, but not for current input type.

Symbol	Descriptions
<b>A Control pressure</b>	
1	0 to 98kPa
5	0 to 0.49MPa
8	0 to 0.78MPa
<b>B Input signal</b>	
0	0 to 10V DC
1	0 to 5V DC
2	4 to 20mA DC
<b>C Port size</b>	
08	Rc1/4
10	Rc3/8
<b>D Option</b>	
B	Bracket attached *

\*Part No. for bracket is ER300-B.

### Block diagram



Refrigerating type dryer

Desiccant type dryer

High polymer membrane dryer

Air filter

Automatic drain other

F.R.L. (Module)

F.R.L. (Separate)

Small F.R.

Precise R.

Electro pneumatic R.

Auxiliary

Flow control valve

Silencer

Check valve / others

Joint / tube

Vacuum F.

Vacuum R.

Vacuum generator

Vacuum auxiliary / pad

Mechanical pressure SW

Electronic pressure SW

Electronic dif. pres. SW

Seating / close contact conf. SW

Pressure SW for coolant

Flow sensor for air

Total air system

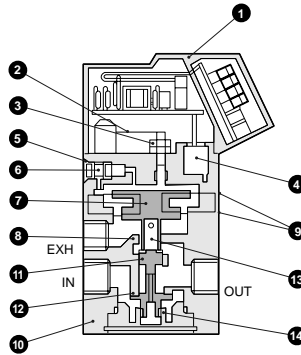
Water cooling refrigerator

Flow sensor for water

F.R.L. unit

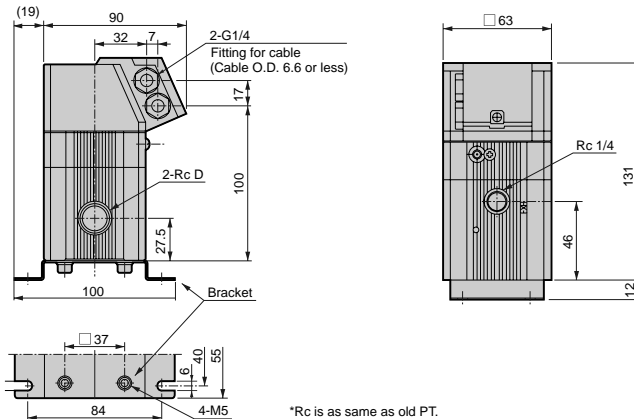
Electronic pneumatic regulator

## Internal structure and parts list



No.	Parts name	Material	No.	Parts name	Material
1	Cover	ABS resin	8	Min- Y packing seal	Fluoro rubber
2	Piezo - electric bimorph	Ceramics	9	Diaphragm	Special nitrile rubber
3	Nozzle	Stainless steel	10	Body	Aluminum
4	Pressure sensor	(Diffusion semiconductor)	11	Valve assembly	Brass/stainless steel
5	Filter (5 μm )	Polypropylene	12	Valve seat	Special nitrile rubber
6	Orifice	Brass	13	Exhaust valve	Aluminum
7	Diaphragm stud	Aluminum	14	Min- Y packing seal	Fluoro rubber

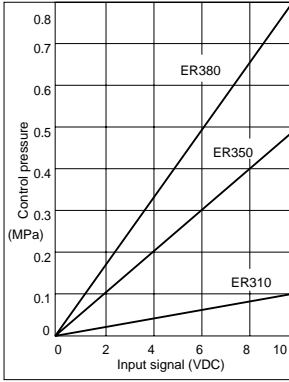
## Dimensions



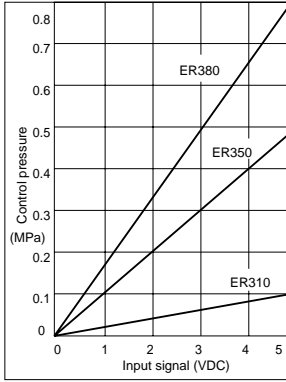
Symbol	D dimension
ER3 * 0-* 08	1/4
ER3 * 0-* 10	3/8

### I/O characteristics

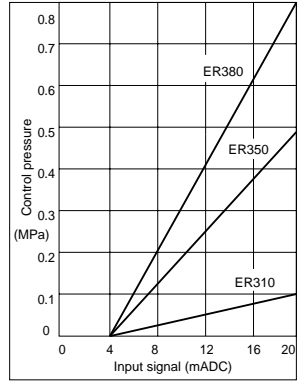
• Input signal 0 to 10V DC (3 wire)



• Input signal 0 to 5V DC (3 wire)



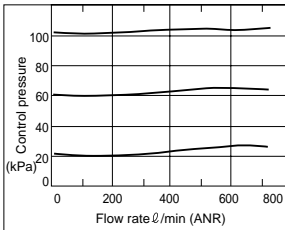
• Input signal 4 to 20mA DC (2 wire)



### Flow characteristics

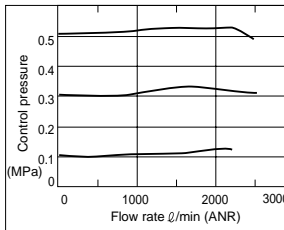
• ER310-010

Conditions JIS B 8372 conformed  
Working pressure: 200kPa  
Port size: Rc3/8



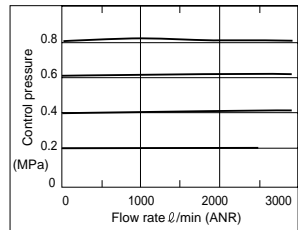
• ER350-010

Conditions JIS B 8372 conformed  
Working pressure: 0.59MPa  
Port size: Rc3/8



• ER380-010

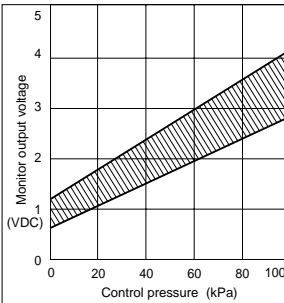
Conditions JIS B 8372 conformed  
Working pressure: 0.88MPa  
Port size: Rc3/8



### Monitor output voltage range

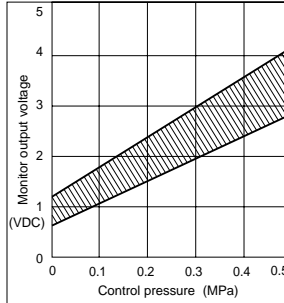
• ER310-010

Accuracy Linearity:  $\pm 0.5\%$ F.S.  
Hysteresis:  $0.5\%$ F.S.



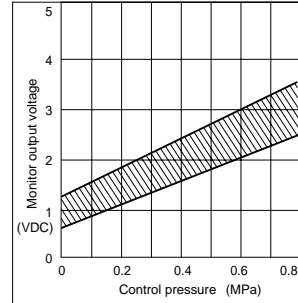
• ER350-010

Accuracy Linearity:  $\pm 0.5\%$ F.S.  
Hysteresis:  $0.5\%$ F.S.



• ER380-010

Accuracy Linearity:  $\pm 0.5\%$ F.S.  
Hysteresis:  $0.5\%$ F.S.



Refrigerating type dryer  
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 Air filter  
 Automatic drain other  
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 F.R.L. (Separate)  
 Small F.R.  
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 Electro pneumatic R.  
 Auxiliary  
 Flow control valve  
 Silencer  
 Check valve / others  
 Joint / tube  
 Vacuum F.  
 Vacuum R.  
 Vacuum generator  
 Vacuum auxiliary / pad  
 Mechanical pressure SW  
 Electronic pressure SW  
 Electronic dif. pres. SW  
 Sealing / close contact conf. SW  
 Pressure SW for coolant  
 Flow sensor for air  
 Total air system

Water cooling refrigerator  
 Flow sensor for water  
 F.R.L. unit  
 Electronic pneumatic regulator