

# General Specifications

## Model PK200 Current-To-Pneumatic Converter

GS 21B03D01-00E

[Style: S2]

The Model PK200 Current-to-Pneumatic Converter is used mostly to actuate diaphragm operated valves, air cylinder operated valves, power cylinders or other terminal elements. Beside these, it is used as a simple signal converter in hybrid instrumentation comprising electronic and pneumatic instruments.



### FEATURES

- High Accuracy and High Reliability.
- High Air Delivery, Low Air Consumption.
- Minimum Effects from Process Environments.
- Electronic Feedback Control.

### FUNCTIONAL SPECIFICATIONS

#### Input Signal:

4 to 20 mA or 10 to 50 mA.  
(As for split ranging, consult Yokogawa.)

#### Input Resistance:

PK200 is not a constant resistor.  
Equivalent circuit of PK200 is shown in Figure 1.

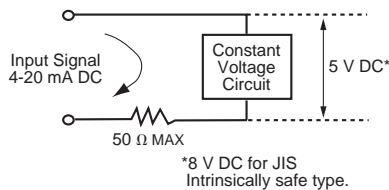


Figure 1. Equivalent Circuit

#### Output Signal:

Output Signal	Standard Output			
	Output signal	Pressure gauge scale	Air supply pressure	Air supply pressure gauge
Pa	20 to 100 kPa	0 to 200 kPa	140 kPa	0 to 200 kPa
kgf/cm <sup>2</sup>	0.2 to 1.0 kgf/cm <sup>2</sup>	0 to 2.0 kgf/cm <sup>2</sup>	1.4 kgf/cm <sup>2</sup>	0 to 2.0 kgf/cm <sup>2</sup>
bar	0.2 to 1.0 bar	0 to 2.0 bar	1.4 bar	0 to 2.0 bar
psi	3 to 15 psi	0 to 30 psi	20 psi	0 to 30 psi

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Output Signal	Doubled Output			
	Output signal	Pressure gauge scale	Air supply pressure	Air supply pressure gauge
Pa	40 to 200 kPa	0 to 400 kPa	240 kPa	0 to 400 kPa
kgf/cm <sup>2</sup>	0.4 to 2.0 kgf/cm <sup>2</sup>	0 to 4.0 kgf/cm <sup>2</sup>	2.4 kgf/cm <sup>2</sup>	0 to 4.0 kgf/cm <sup>2</sup>
bar	0.4 to 2.0 bar	0 to 4.0 bar	2.4 bar	0 to 4.0 bar
psi	6 to 30 psi	0 to 60 psi	34 psi	0 to 60 psi

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#### Auto/Manual (A/M) Transfer Switch:

Mounted on front of housing, in manual mode, output signal varied by adjusting the external supply pressure regulator. It can be chosen as option.

#### Zero Adjustment:

Continuously adjustable, externally set.  
Adjustable range; Approximate ±10 % of span.

#### Span Adjustment:

Continuously adjustable.  
Adjustable range; Approximate 100 to 125 % of span.

#### Air Consumption:

Max. 4 Nl/min. or 0.24 Nm<sup>3</sup>/hr at 140 kPa (20 psi) air supply pressure.

#### Output Air Capacity:

Max. 110 Nl/min. or 6.6 Nm<sup>3</sup>/hr at 140 kPa (20 psi) air supply pressure.

#### Output Load Capacity:

See Figure 2.

#### Operating Temperature Limits:

–40 to 80 °C (–40 to 176 °F) (General use)  
–20 to 60 °C (–4 to 140 °F)  
(JIS Flameproof type and JIS Intrinsically safe type)  
–40 to 60 °C (–40 to 140 °F)  
(FM Explosionproof type and CSA Explosionproof type)

#### Storage Temperature Limits:

–40 to 80 °C (–40 to 176 °F)

#### Humidity limits:

5 to 100 %/RH

#### Required Operating Voltage:

Min.; 5.1V (at 4 mA)  
Max.; 6V (at 20 mA)

#### Degrees of Protection:

IP54, NEMA 4X, JIS C0902 Immersion proof

#### Explosion Protection:

See "Optional Specification"

#### EMC Conformity Standards: CE , N200

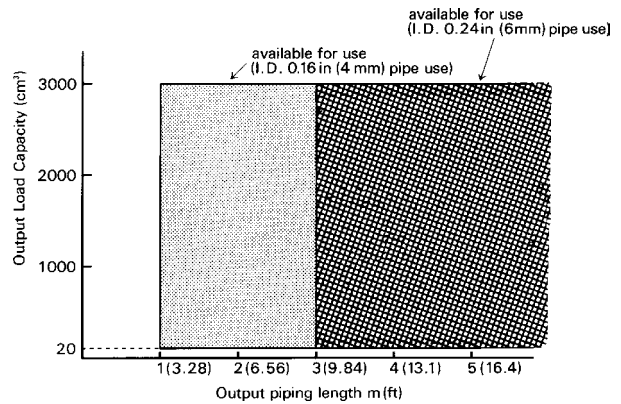
EN61326, AS/NZS 2064

**■ PERFORMANCE SPECIFICATION**

- Linearity:**  
±0.2 % of span
- Hysteresis:**  
0.2 % of span
- Repeatability:**  
0.1 % of span
- Temperature Effect:**  
±0.07°C of span  
(Typical value; ±0.04°C of span)
- Vibration Effect:**  
±0.5% of span  
(Conditions; 5 - 200 Hz at 2G, Steady state)
- Supply Pressure Effect:**  
Negligible
- Reverse Polarity Protection:**  
No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 180 mA.
- RFI/EMI Effect:**  
±1.0 % of span at 10 V/m, Class 2 (wire not in conduit), ABC.
- Overpressure Effect:**  
Less than 0.1 % of span for misapplication of up to 100 psi (7.0 kg/cm<sup>2</sup>) supply pressure for less than 5 min. to the input port.
- Stability:**  
Short term; 0.1 % of F.S./hr  
Long term; 0.2 % of F.S./month
- Position Effect:**  
10°; ±0.1 %    90°; ±0.4 %

**■ PHYSICAL SPECIFICATION**

- Housing and Cover Material:**  
Cast aluminum alloy, finished with polyurethane paint.  
Deep-sea moss-green (Munsell 0.6GY3.1/2.0)
- O-Ring Material:**  
NBR JIS B2401-0977 1 classA
- Pressure Gauge Case:**  
Stainless steel JIS SUS304
- Supply Air, Output Signal, Output Gauge Connections:**  
Rc1/4 or 1/4 NPT female
- Electrical Connection:**  
G1/2, G3/4, 1/2 NPT or 3/4 NPT female
- Mounting:**  
Surface or 2-inch pipe.
- Weight:**  
2.8 kg (6.1 lb)



**Figure 2. Relationship between Output Load Capacity and Piping Length**

**■ MODEL & SUFFIX CODES**

Model	Suffix codes	Description
<b>PK200</b>	.....	Current-to-Pneumatic Converter
Input signal	<b>-A</b> .....	4 to 20 mA DC
	<b>-C</b> .....	4 to 20/10 to 50 mA DC changeable type
Output signal	<b>1</b> .....	Output signal: 20 to 100 kPa      Gauge scale: 0 to 200 kPa
	<b>2</b> .....	Output signal: 40 to 200 kPa      Gauge scale: 0 to 400 kPa
	<b>3</b> .....	Output signal: 0.2 to 1 kgf/cm <sup>2</sup> Gauge scale: 0 to 2 kgf/cm <sup>2</sup>
	<b>4</b> .....	Output signal: 0.4 to 2 kgf/cm <sup>2</sup> Gauge scale: 0 to 4 kgf/cm <sup>2</sup>
	<b>5</b> .....	Output signal: 0.2 to 1 bar      Gauge scale: 0 to 2 bar
	<b>6</b> .....	Output signal: 0.4 to 2 bar      Gauge scale: 0 to 4 bar
	<b>7</b> .....	Output signal: 3 to 15 psi      Gauge scale: 0 to 30 psi
	<b>8</b> .....	Output signal: 6 to 30 psi      Gauge scale: 0 to 60 psi
	<b>9</b> .....	Output signal: 3 to 27 kPa      Gauge scale: 0 to 60 psi
Connections	<b>1</b> .....	Air connection: Rc1/4      Electric connection: G1/2 female
	<b>2</b> .....	Air connection: Rc1/4      Electric connection: G3/4 female
	<b>3</b> .....	Air connection: 1/4 NPT female      Electric connection: 1/2 NPT female
	<b>4</b> .....	Air connection: 1/4 NPT female      Electric connection: 3/4 NPT female
Optional codes		<input type="checkbox"/> Optional specification

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**OPTIONAL SPECIFICATION**

Item	Description	Code
AUTO/MANUAL Transfer Switch	Mounted on front of housing, in manual mode, output signal varied by adjusting the external supply pressure regulator.	<b>AM</b>
Double Scale Pressure Gauge	Double scales are Pa and kgf/cm <sup>2</sup> .	<b>GW</b>
Stainless Steel Screw and Bracket	Screw and bracket, both are made of stainless steel.	<b>SS</b>
Reverse Action	Increasing input signal decreases output pressure.	<b>RA</b>
Lighting Protector	Installed in the terminal box to protect internal circuitry from high voltage surges such as those caused by lightning-induced.	<b>L</b>
Special Color Finished on Housing Cover	Specify color code in GS 22D1F1-E.	<b>SCF-□</b>
Epoxy Coating	Epoxy resin-baked coating	<b>X1</b>
Valve Mounting Type	Output load capacity and pipe length: more than I. D. 0.16-inch(4 mm) pipe, length 11.8 inch (30 cm) + 20 cc.	<b>V</b>
Explosionproof type	JIS Flameproof Approval (Ex d IIB+H <sub>2</sub> T6 X) Amb. Temp.: -20 to 60 °C (-4 to 140 °F) Electrical connection: G1/2 female, G3/4 female, and 1/2 NPT female* <sup>1</sup>	<b>JF3</b>
	FM Explosion proof Approval Explosionproof for Class I, Division 1, Groups B, C and D. Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G. Indoors and Outdoors (NEMA 4X). Amb. Temp.: -40 to 60 °C (-40 to 140 °F) Electrical connection: 1/2 NPT female* <sup>2</sup>	<b>FF1</b>
Intrinsically safe type	CSA Intrinsically safe Approval Intrinsically Safe for Class I, Division 1, Groups A, B, C and D. Class II, Division 1, Groups E, F and G. Class III, Division 1 Hazardous Locations Nonincendive for Class I, Division 2, Groups A, B, C and D. Class II, Division 2, Groups F and G. Class III, Division 1 Hazardous Locations. Outdoor Hazardous Locations, Encl Type 4X Temperature Class : T4 Amb. Temp.: -40 to 60 °C (-40 to 140 °F) V <sub>max</sub> = 30 V, I <sub>max</sub> = 165 mA, P <sub>max</sub> = 0.9 W, C <sub>i</sub> = 2 nF, L <sub>i</sub> = 730 μH	<b>CS1</b>
	JIS Intrinsically safe Approval (Ex ia IIC T4) Amb. Temp.: -20 to 60 °C (-4 to 140 °F)	<b>JS3</b>
Attached flameproof packing adapter * <sup>3</sup>	Electrical connection: G1/2 female Applicable cable O.D.: 8 to 12 mm, 1 pc.	<b>G11</b>
	Electrical connection: G3/4 female Applicable cable O.D.: 10 to 16 mm, 1 pc.	<b>G21</b>

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\*1: Applicable for Connections code 1, 2, and 3.

\*2: Applicable for Connections code 3.

\*3: If cable wiring is to be used to a JIS flameproof type transmitter, add the YOKOGAWA-assured flameproof packing adapter.

**< Ordering Information >**

Specify the following when ordering

1. Model, suffix codes, and optional codes
2. Tag Number (if required)

**< Safety Barrier for JIS Intrinsic Safe Type >**

Supplier	Type	Model
MTL	Isolator	MTL5046
P+F		KFD2-SCD-Ex 1. LK

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## DIMENSIONS

Unit:mm (approx.inch)

