

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.

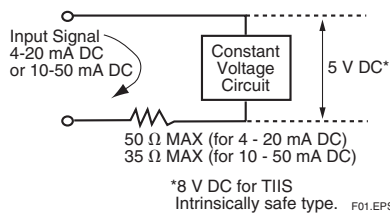


Figure 1. Equivalent Circuit

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 ²	0.2 to 1.0 kgf/cm ²	0 to 2.0 kgf/cm ²	1.4 kgf/cm ²	0 to 2.0 kgf/cm ²
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

T01.EPS

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 ²	0.4 to 2.0 kgf/cm ²	0 to 4.0 kgf/cm ²	2.4 kgf/cm ²	0 to 4.0 kgf/cm ²
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.
(Up to 90% of supply pressure)

Air Consumption:

Max. 4 NI/min. or 0.24 Nm³/hr at 140 kPa (20 psi) air supply pressure.

Output Air Capacity:

Max. 110 NI/min. or 6.6 Nm³/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)
(TIIS Flameproof type and TIIS 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:

Input Signal	Min.	Max.
4 to 20mA (except /JS3)	5.2V (at 4mA)	6.0V (at 20mA)
4 to 20mA (for /JS3)	8.2V (at 4mA)	9.0V (at 20mA)
10 to 50mA	5.35V (at 10mA)	6.75V (at 50mA)

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Degrees of Protection:

IP54, NEMA 4X

Explosion Protection:

See “Optional Specification”

EMC Conformity Standards: CE , N200

EN61326-1 Class A, Table 2
(For use in industrial locations)

■ PERFORMANCE SPECIFICATION

- Accuracy:1**
±0.5 % of span
- Linearity:**
±0.2 % of span
- Hysteresis:**
0.2 % of span
- Repeatability:**
0.1 % of span
- Vibration Effect:**
±0.5% of span (Zero shift)
(Conditions; 5 - 200 Hz at 2G, Steady state)
- Supply Pressure Effect:**
±0.1%/10 kPa
- Reverse Polarity Protection:**
No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 62 mA.
- Stability:**
Short term; 0.1 % of F.S./hr
Long term; 0.2 % of F.S./month
- Position Effect:**
10 °; ±0.2 % of span 90 °; ±0.4 % of span

■ 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:**
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) (With pressure gauge, without bracket)

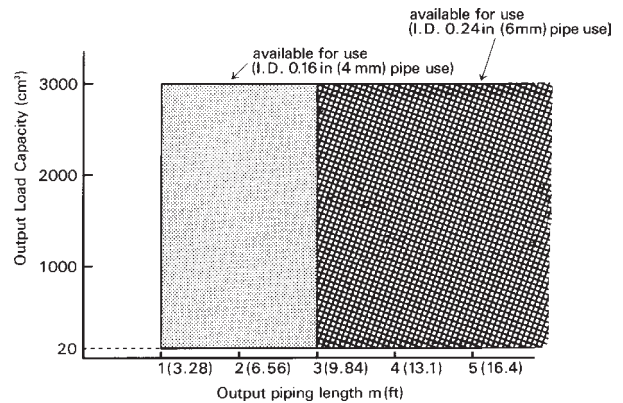


Figure 2. Relationship between Output Load Capacity and Piping Length

■ MODEL & SUFFIX CODES

Model	Suffix codes	Description
PK200	Current-to-Pneumatic Converter
Input signal	-A	4 to 20 mA DC
	-C	4 to 20/10 to 50 mA DC changeable type
Output signal	1	Output signal: 20 to 100 kPa Gauge scale: 0 to 200 kPa
	2	Output signal: 40 to 200 kPa Gauge scale: 0 to 400 kPa
	3	Output signal: 0.2 to 1 kgf/cm ² Gauge scale: 0 to 2 kgf/cm ²
	4	Output signal: 0.4 to 2 kgf/cm ² Gauge scale: 0 to 4 kgf/cm ²
	5	Output signal: 0.2 to 1 bar Gauge scale: 0 to 2 bar
	6	Output signal: 0.4 to 2 bar Gauge scale: 0 to 4 bar
	7	Output signal: 3 to 15 psi Gauge scale: 0 to 30 psi
	8	Output signal: 6 to 30 psi Gauge scale: 0 to 60 psi
	9	Output signal: 3 to 27 psi Gauge scale: 0 to 60 psi
Connections	1	Air connection: Rc1/4 Electric connection: G1/2 female
	2	Air connection: Rc1/4 Electric connection: G3/4 female
	3	Air connection: 1/4 NPT female Electric connection: 1/2 NPT female
	4	Air connection: 1/4 NPT female Electric connection: 3/4 NPT female
Optional codes		/□ 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.	AM
Double Scale Pressure Gauge	Double scales are kPa and kgf/cm ² . ^{*6}	GW
Stainless Steel Screw and Bracket	Screw and bracket, both are made of stainless steel.	SS
Reverse Action	Increasing input signal decreases output pressure.	RA
Lightning Protector	Installed in the terminal box to protect internal circuitry from high voltage surges such as those caused by lightning-induced.	L
Special Color Finished on Housing Cover	Amplifier cover only ^{*7}	SCF-□
Epoxy Coating	Epoxy resin-baked coating ^{*5}	X1
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.	V
Explosionproof type	TIIS Flameproof Approval (Ex d IIB+H ₂ T6 X) ^{*1} Amb. Temp.: -20 to 60 °C (-4 to 140 °F) Electrical connection: G1/2 female, G3/4 female, and 1/2 NPT female	JF3
	FM Explosion proof Approval ^{*2} 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	FF1
Intrinsically safe type	CSA Intrinsically safe Approval ^{*4} 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) Vmax = 30 V, Imax = 165 mA, Pmax = 0.9 W, Ci = 2 nF, Li=730 μH	CS1
	TIIS Intrinsically safe Approval (Ex ia IIC T4) ^{*4} Amb. Temp.: -20 to 60 °C (-4 to 140 °F)	JS3
Attached flameproof packing adapter ^{*3}	Electrical connection: G1/2 female Applicable cable O.D.: 8 to 12 mm, 1 pc.	G11
	Electrical connection: G3/4 female Applicable cable O.D.: 10 to 16 mm, 1 pc.	G21

T06E.EPS

- *1: Applicable for Connections code 1, 2, and 3.
If cable wiring is to be used to a TIIS flameproof type, select attached flameproof packing adapter /G□.
- *2: Applicable for Connections code 3.
- *3: If cable wiring is to be used to a TIIS flameproof type transmitter, add the YOKOGAWA-assured flameproof packing adapter.
- *4: Applicable for Input signal code A.
- *5: Not applicable for option code /SCF-□.
- *6: Applicable for output signal code 1, 2, 3 and 4.
- *7: /SCF-G1P: Munsell code; N1.5 Black
/SCF-G2P: Munsell code; 7.5 BG 4/1.5 Jade green
/SCF-G7P: Metallic silver

< Ordering Information >

- Specify the following when ordering
1. Model, suffix codes, and optional codes
 2. Tag Number (if required)

< Safety Barrier for TIIS 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)

