

PICK-UP

DATA SHEET

FNL

The Pick-up is a device utilizing an induction potentiometer and designed for converting an angle of rotation into electrical signals. The input axis is mechanically turned at a certain angle and this rotation is then converted into electrical signals of 4 to 20mA DC. It is ideally suited for use as a displacement type transmitter.

FEATURES

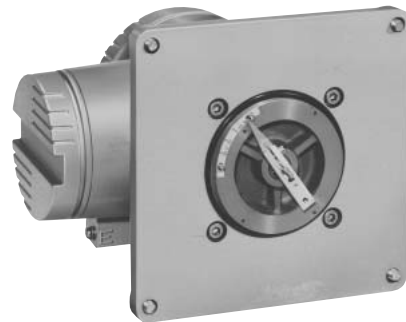
1. **High reliability**
Use of a contactless induction potentiometer assures a long life and high reliability.
2. **Various specifications available**
The Pick-up can be equipped with flameproofing, intrinsically safe explosionproofing, a large indicator, an arrester and other devices.
3. **Easy maintenance and handling**
The Pick-up is compact and lightweight, and zero and span adjustments plus output signal checks can all be easily made on the front panel.

SPECIFICATIONS

- Input angle of rotation:**
0 to 22.5°, 0 to 90° or 0 to 270°
- Excessive input rotation angle:**
Approx. 11° (at 0 to 22.5° or 0 to 90°)
Approx. 4° (at 0 to 270°)
(Rotation is restricted below 0 or above 100%)
- Input rotation torque:**
Less than 0.02N·cm(2.04gf·cm)
- Direction of rotation:**
Counterclockwise (when viewed from a point facing the shaft extension) or clockwise
- Output signal:** 4 to 20mA DC
- Allowable load resistance:**
0 to 550Ω (at 24V DC)
- Power supply:** 13 to 33V DC
(26V DC or less with intrinsically safe explosionproofing)
(27V DC or less with arrester)
- Wiring system:** 2 wire system
- Ambient temperature:**
-30 to +80°C
(50°C max. with intrinsically safe explosionproofing)
(60°C max. with arrester)
(70°C max. with flameproofing)



Front view



Back view

- Response speed:** Time constant of 0.1 sec or less
- Zero and span adjustment width:**
±5%
- Waterproof structure:**
JIS C 0920 immersion-proof type
(Note that input shaft section is not of sealed structure. A 70mm dia. seal O ring must be used on its circumference)
- Explosionproof structure:**
Intrinsically safe explosionproofing JIS i3nG5
Flameproofing JIS d2G4

External dimensions (HxWxD):

150 x 183 x 167 (197)mm
 Dimension in parenthesis is when field indicator is equipped

Mass (weight): Approx. 2.7kg

Conduit connection:

G1/2

Finish color: Silver (epoxy and polyurethane double coating)

(Lid alone is back, N3, when field indicator is equipped)

Optional specifications

Field indicator: Built-in electronics casing 1.5 class
 0 to 100% linear or square scale

Arrester: Built-in electronics casing

Acid and alkaliproof treatment:

Mounting screws and washers, SUS304

Scope of delivery:

Main unit

Characteristics:

(Indicated in % of span for standard product)

Allowance: Max. $\pm 0.5\%$ at 0 to 22.5°
 Max. $\pm 1.0\%$ at 0 to 90°, or 0 to 270°

Linearity: Max. $\pm 0.5\%$ at 0 to 22.5°
 Max. $\pm 1.0\%$ at 0 to 90°, or 0 to 270°

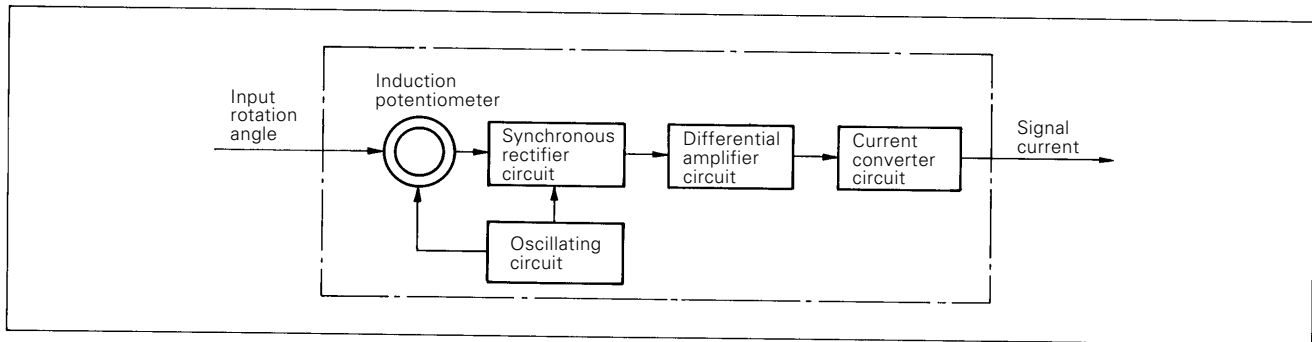
Repeatability: Max. $\pm 0.1\%$

Ripple content: $\pm 1.5\%$ peak to peak (at approx. 25 kHz)

Temperature effect (zero point):
 1.2%/60°C span at 0 to 60°C

Power supply fluctuation (zero point):
 0.04%/2V

FUNDAMENTAL BLOCK DIAGRAM



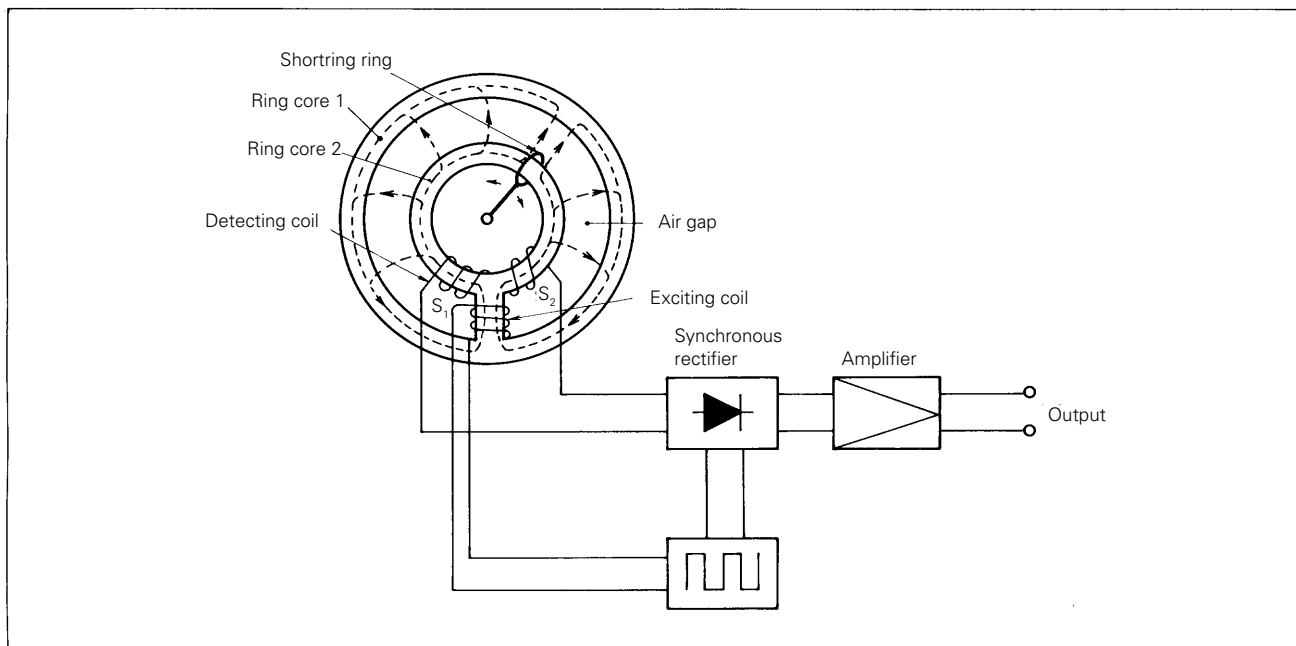
CODE SYMBOLS

1	2	3	4	5	6	7	8	9	10
F	N	L					4	-	0

		Description				
		Input rotation angle, rotating direction				
		Input rotation angle	Rotating direction(*)	Remarks		
1 1		0 to 90°C	CCW			
1 2			CW			
2 1		0 to 22.5°C	CCW			
2 2			CW			
3 1		0 to 22.5°C	CCW	Zero point stopper equipped (impossible without case)		
4 1		0 to 270°C	CCW			
4 2			CW			
		Enclosure, indicator, arrester, output signal				
		Explosionproof	Field indicator		Arrester	Output signal
			Yes/No	Scale		
0A		Without case	—	—	—	4 to 20mA DC
1A		Non-explosionproof	—	—	—	4 to 20mA DC
1K			—	—	○	
1D			○	0 to 100% linear	—	
1L			○	0 to 100% linear	○	
1G			○	0 to 100% square	—	
1M		○	0 to 100% square	○		
1B		Intrinsic safety (JIS i3nG5)	—	—	—	4 to 20mA DC
1E			○	0 to 100% linear	—	
1H		○	0 to 100% square	—		
2A		Flameproof (JIS d2G4, Flameproof threaded-joint metal conduit type)	—	—	—	4 to 20mA DC
2K			—	—	○	
2D			○	0 to 100% linear	—	
2L			○	0 to 100% linear	○	
2G			○	0 to 100% square	—	
2M		○	0 to 100% square	○		
3A		Flameproof (JIS d2G4, Flameproof packing type)	—	—	—	4 to 20mA DC
3K			—	—	○	
3D			○	0 to 100% linear	—	
3L			○	0 to 100% linear	○	
3G			○	0 to 100% square	—	
3M		○	0 to 100% square	○		
		Treatment				
	Y	Standard				
	B	Acid and alkaliproof treatment				

Note: *The rotating direction refers to rotation when viewed from a point facing the shaft extension:
 CW: clockwise
 CCW: Counter-clockwise

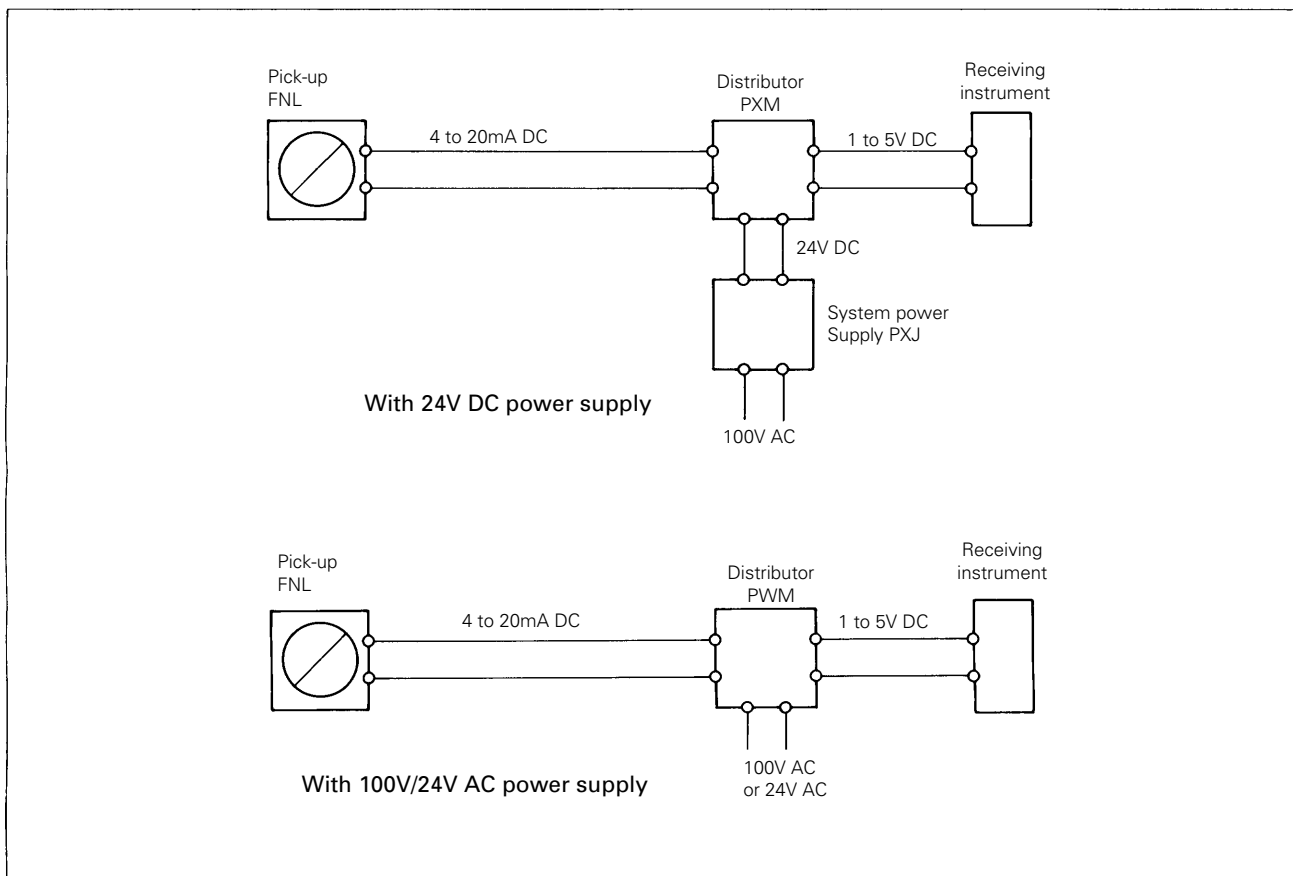
PRINCIPLE OF INDUCTION POTENTIOMETER



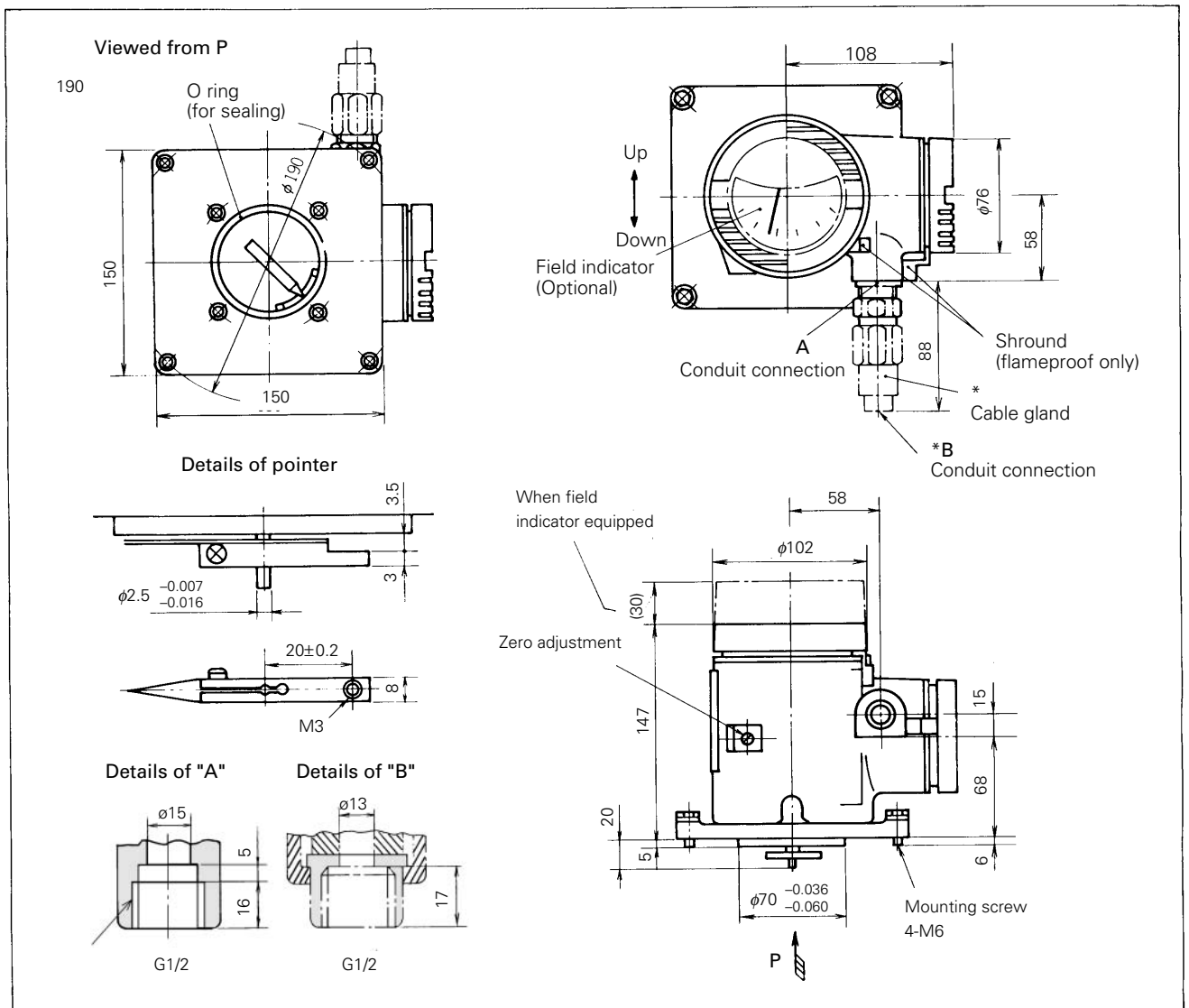
When the shorting ring is located at the center, the magnetic flux at left and right is equal and the voltages produced at detecting coils S_1 and S_2 are equal. But if the ring is rotates to the right for example, then the flux at S_1 increase

and that at S_2 will decrease. This difference is produced and converted into an output voltage proportional to the ring displacement (input rotation angle).

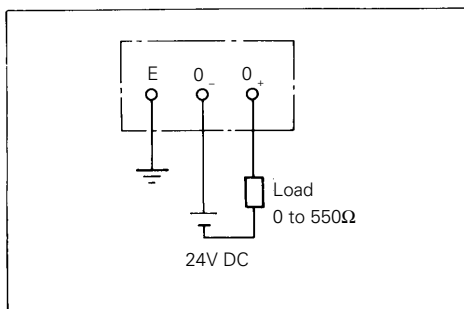
EXAMPLE OF CONFIGURATION ACCORDING TO POWER SUPPLY



OUTLINE DIAGRAM (Unit:mm)



CONNECTION DIAGRAM



RELATED DEVICES

Opener Distributor

ORDERING INFORMATION

1. Product name
2. Code symbols
3. Angle of rotation
4. Direction of rotation
5. Whether explosion-proofing, arrester, indicator necessary
6. Other requirements

⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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