HEIGHT TRANSMITTER

DATA SHEET FNG

This is a height transmitter utilizing an induction potentiometer.

A wire rope is placed atop the gas holder whereby the lift of the holder moves the rope which in turn rotates the pulley. This motion is conveyed to the induction potentiometer which then provides a current signal of 4 to 20mA DC proportional to the holder lift.

FEATURES

1. High reliability
   A contactless induction potentiometer is employed which assures a long life and high reliability of the instrument.
2. Various specifications available
   The transmitter can be provided with intrinsically safe explosionproofing, various materials for its components, an arrester, an alarm unit and other specifications.

SPECIFICATIONS

Measuring range:
0 to 0.5.....40 m
(If equipped with a reduction gear, the range of measurement can be increased up to 320m)

Standard range of measurement:
As listed in table on page 2

Indicator: Digital type (4 digits)

Allowance: ±1.0%

Output signal: 4 to 20mA DC

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

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)
100V/24V AC ±10%, 50/60 Hz
(see "Example of configuration" on page 5)

Ambient temperature:
–30 to +80°C
(Not usable in freezing condition)
50°C max. with intrinsically safe explosionproofing
60°C max. with arrester

Ambient humidity:
Less than 95% RH

Principal materials:
Wire rope; stranded mild steel wire or stranded stainless steel wire
Counterweight; iron or stainless steel
Instrument body; aluminum alloy

Conduit connection:
G3/4

Case: Splash-proof type (JIS C 0920)

Arrester: Built-in on request

Explosionproof structure:
Intrinsically safe explosionproofing
i3nG5

Mass (weight): Approx. 10.5kg

External dimensions (HxWxD):
Approx. 320 x 346 x 218 mm

Finish color: Silver (melamine paint);
acid and alkaliproof treatment is available, on request

Optional specifications

Alarm unit (limit switch)
(Cannot be installed on a transmitter equipped with intrinsically safe explosion-proof structure);
Contact capacity
250V AC 5A
230/115V DC 0.2/0.4A
N.O "1a" contact
3 pieces are available in the transmitter for upper limit and lower limit

Reduction gear (Employed for a range of measurement exceeding 40m)

Scope of delivery:

Transmitter and standard accessories;
(wire rope (4mm dia.), counterweight, guide pulley (3 pcs))
Reduction gear (reduction ratio 1:8), on request;
(moving pulley, fixed pulley, intermediate counterweight and wire rope (6mm dia., length as requested))

List of standard measuring ranges

Measuring range [m]	Measuring range [m]	Measuring range [m]	Measuring range [m]
0 to 0.5	0 to 3.5	0 to 6	0 to 10
0 to 1.5	0 to 4	0 to 6.5	0 to 12
0 to 2	0 to 4.5	0 to 7	0 to 14
0 to 2.5	0 to 5	0 to 8	0 to 15
0 to 3	0 to 5.5	0 to 9	0 to 16

CODE SYMBOLS

1	2	3	4	5	6	7	8		9	10	11	12	Description
F	N	G					4	-					
													Length [m] of 4mm dia. wire rope
			2										10
			3										15
			4										20
			5										25
			6										30
			7										40
			8										50
			* 9										60
													Length [m] of 6mm dia. wire rope
				Y									None (no reduction gear provided)
				* A									30
				* B									40
				* C									50
				* D									60
				* E									80
				F									100
				H									120
				J									140
				K									160
				L									180
				M									200
					0								**Reduction gear**
					* 1								None (standard)
													Provided (for high lift)
						A							**Transmitter**
						B							4 to 20mA
													4 to 20mA intrinsically safe explosionproof structure
						K							"A" with arrester
													Alarm unit (limit switch)
													Note: Impossible when "B" specified in 7th digit of code.
									0				None
									2				Upper/lower limit, 1 piece each
									4				Upper/lower limit, 2 pieces each
									6				Upper/lower limit, 3 pieces each
													Material of counterweight
											E		Iron
											* S		Stainless steel (SUS304)
													Material of rope
											E		Stranded mild steel wire
											* S		Stranded stainless steel wire (SUS304)
													Treatment
												Y	Standard
												B	Acid and alkaliproof treatment

Note: *items:Nonstandard

INSTALLATION INSTRUCTION

Fig. 1 When normal lift

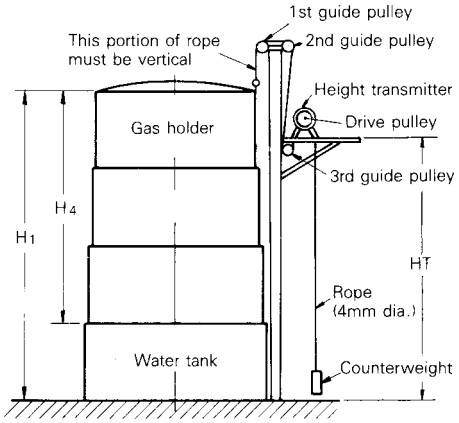
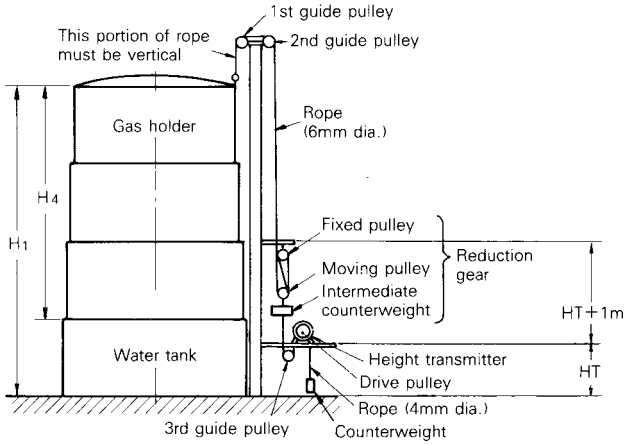


Fig. 2 When high lift (with reduction gear)



Composition
- Transmitter ——— 1
- Guide pulley ——— 3
- 4mm dia. rope —— 1
- Counterweight —— 1

In Fig. 1:

Transmitter mounting height

$HT\ [m] > H_4 + 1.5m$

Rope length (4mm dia. stranded mild steel wire)

$L_4\ [m] \fallingdotseq H_1 + 6m$

Composition
- Transmitter ——— 1
- Guide pulley ——— 3
- 6mm dia. rope — 1
- Counterweight —— 1
- Fixed pulley ——— 1
- Moving pulley —— 1
- Intermediate counterweight— 1
- 4mm dia. rope —— 1

In Fig. 2:

Transmitter mounting height

$$HT\ [m] > \frac{H_4\ [m]}{8} + 1.5\ [m]$$

Rope length (6mm dia. stranded mild steel wire)

$L_6\ [m] \fallingdotseq 2 \times H_4 + 6\ [m]$

Rope length (4mm dia. stranded mild steel wire)

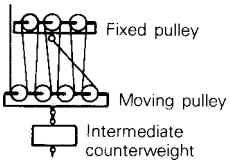
$$L_4\ [m] \fallingdotseq \frac{H_4\ [m]}{8} + 5\ [m]$$

Where

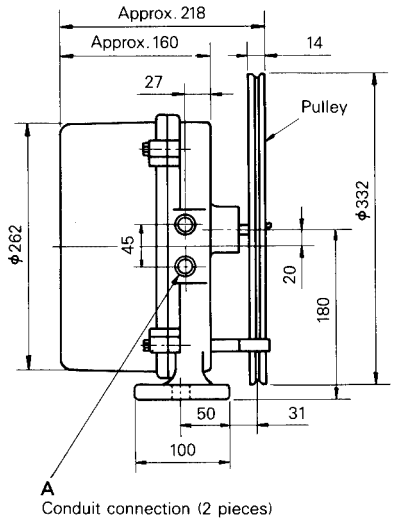
H_4 : Holder lift variation

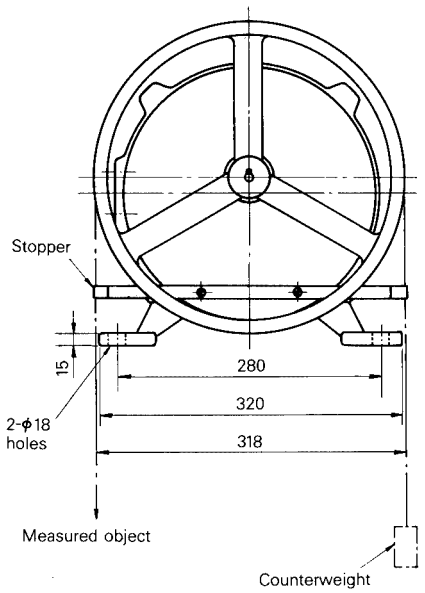
H_1 : Holder maximum height

Enlarged view of reduction gear

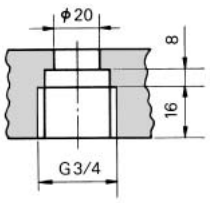


OUTLINE DIAGRAM (Unit:mm)

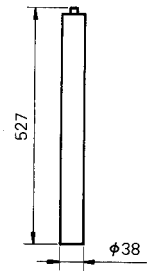




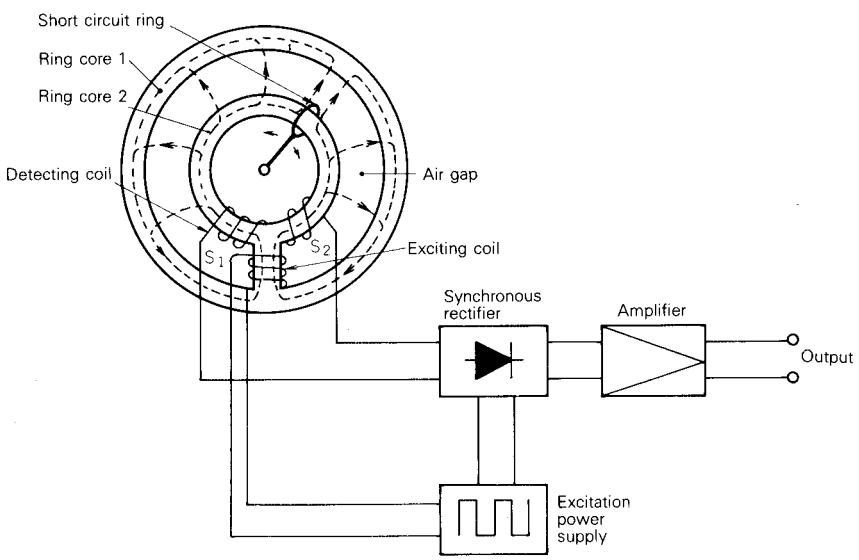
Details of "A"



Counterweight

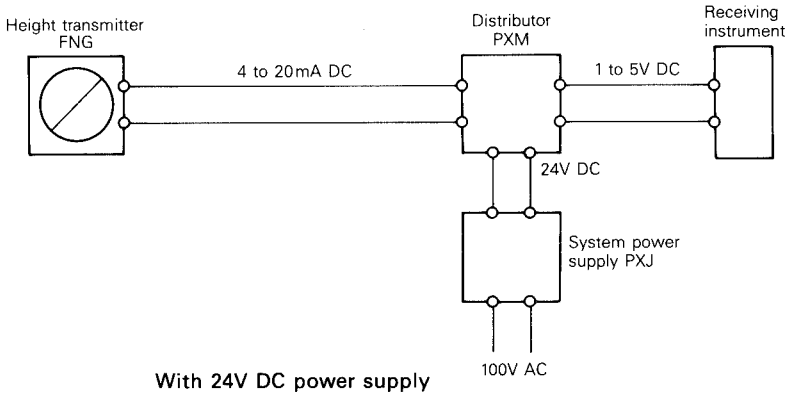


PRINCIPLE OF INDUCTION POTENTIOMETER

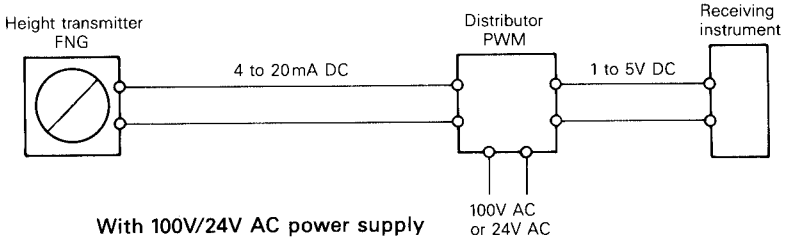


When the short circuit ring is positioned at the center, the magnetic flux on left and right sides is equal and the voltages produced at detecting coils S_1 and S_2 are equal. But if the ring is rotated to the right side for example, then the flux at S_1 will increase and that at S_2 will decrease. According to this difference an output voltage is produced which is proportional to the ring displacement (input rotating angle).

EXAMPLE OF CONFIGURATION ACCORDING TO POWER SUPPLY

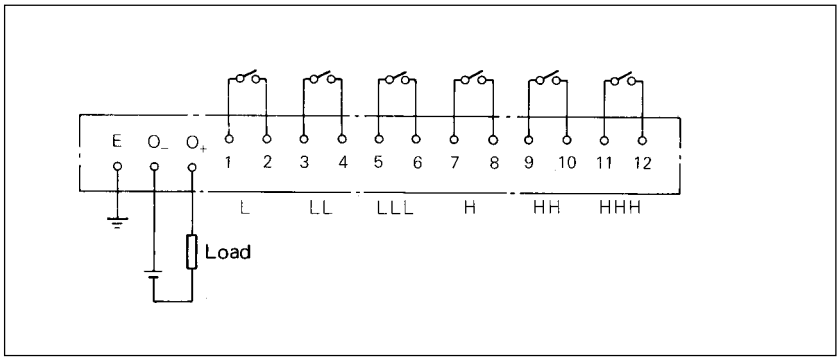


With 24V DC power supply



With 100V/24V AC power supply

CONNECTION DIAGRAMS



RELATED DEVICES

Distributor (PTL)

ORDERING INFORMATION

1. Object to be measured or application
2. Product name
3. Code symbols
4. Measuring range
5. Length of wire rope
6. Material of counterweight
7. Whether any attachments are required (reduction gear, alarm unit)
8. Whether explosionproofing and other treatment are required
9. Other matters that demand care

⚠ Caution on Safety

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

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