TAKEX Ultrasonic Analog Sensor

US-S25AN Instruction Manual

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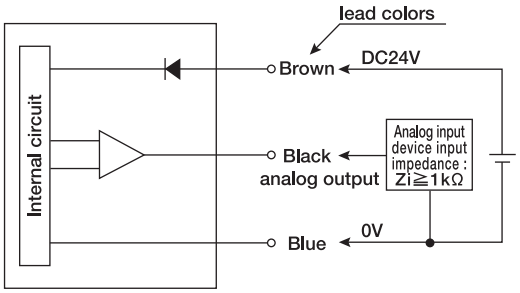
OUTLINE

This ultrasonic sensor has M18 threaded housing with analog output.
It is suitable for the liquid level deteciton.

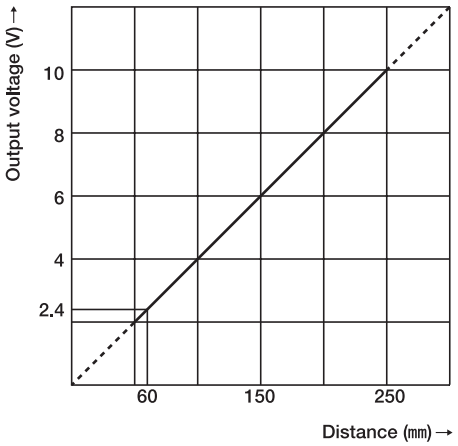
SPECIFICATIONS

Rating/performance	Model	U S − S 2 5 A N
	Detection method	Ultrasonic reflective
	Detection distance	60～250mm
	Detection object	30×30mm (sample object : 1mm thick aluminum plate)
	Power supply	24VDC±10% / Ripple 10% or less
	Current consumption	25 mA max.
	Response time	10V→2V : 30ms max. / 2V→10V : 300ms max.
	Output mode	Voltage output in proportion to distance 2.4V±0.5V at 60mm detecting distance 10.0V±0.5V at 250mm detecting distance
	Minimum resolution	2mm (with 80mV ripple)
	Linearity	±5% of F.S. max.
	Temperture characteristics	0.09% of F.S. / ℃ max.
Specification	Ultrasonic frequency	380kHz±15kHz
	Indicator	Not provided
	Connection	Permanently attached cord (φ4) 0.2㎟× 3 cores. 2m (Black)
	Mass	65g max.
	Protective feature	Protection against reverse connection
	Material	Case, Nut : Polycarbonate
		Surface of detection : Glass Epoxy Electro-conductive EPDM
Environment	Ambient temperature	−10～+55℃ (non-freezing)
	Ambient humidity	35～85%RH (non-condensing)
	Ambient wind speed	1 m/s max.
	Protective structure	I P54 (no water drop allowed on head)
	Vibration	10～55Hz 1.5mm amplitude / 2hours each in 3 directions
	Shock	500m/s² 2 times each in 3 directions (ultrasonic element excluded)

OUTPUT CIRCUIT AND WIRING



DISTANCE-OUTPUT CHARACTERISTICS



- The effective range is 60−250mm (distance) or 2.4V±0.5V～10V±0.5V (voltage).
  Be sure to use signals within this range.
- Do not use it in 60mm or less.
- Put the detecting object at the center axis of the wave range.

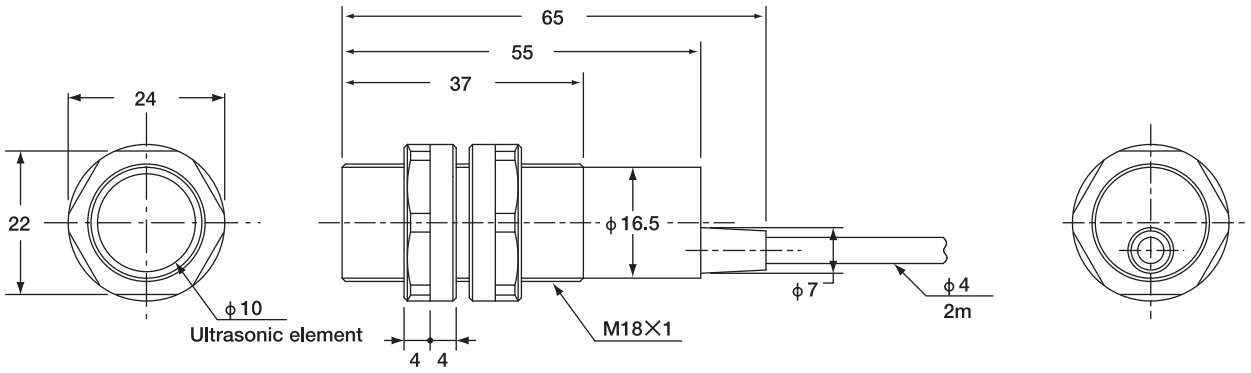
ADJUSTMENT AND DETECTING OBJECTS

- Detection at the center of ultrasonic wave axis offers normal distance output. For detection of passing objects, set the sensor so that the detection occurs as close to the central axis as possible. (The central axis of the sensor and the ultrasonic wave may be apart by a few degrees.)
- Certain limitations apply to detectable objects.
  With objects that may function as noise absorbing materials, soft cloths, sponges, etc., operating distance may be significantly reduced or the sensor may not be activated.
- For the purpose of liquid level detection, suppress the bubbling of the liquid level in order to avoid the inaccurate output.

CAUTION OF USAGE

- 380kHz ultrasonic waves is applied for detection to discriminate against external sonic.
  Do not install sensor in sites close to metal sound, an air nozzle, a glass cutter, etc. which similar frequency is likely to be caused.
- Ultrasonic sensors use air as the transmission medium and places subject to localized temperature change or significant change in convection (air from air conditioner or heat generator) must be avoided.
- Water on the ultrasonic element (white part on the front of the sensor) may reduce the sensitivity.
  Also absorption of water may cause deterioration.
- Short circuit protection is not built-in at the output.
  Take an attention for short of the load.
- Do not use the sensor with turning the power On/Off consecutively.
- Avoid wiring with housed in the same conduit as high voltage line or inverter unit line.
- It takes approx 5 to 10 min. to stabilize analogue voltage after power is supplied.
  Supply the power in advance when fine adjustment or precision detection is required.
  The voltage fluctuates by approx 100mV.
- Use a cloth with water for cleaning the ultrasonic element and wipe it off gently.
- Make detection test by using the actual object. In the case of detecting cylindrical objects like rod or roll, the detection range may be shorter than the specification.

DIMENSIONS (in mm)



(NOTES OF INSTALLATION)

Do not tighten the nut with excess torque.
Optimum tightening torque is 0.98N·m or less.

- This sensor is designed to detect a specific object. It is not provided with control functions for prevention of injuries or accidents in itself.
- Takex will not held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.
- Specifications and dimensions may be subject to change without notice.