

Noise Sensor Application Manual

Model: YS19-X, YS20



Document modification record

Seria	Modification	Modify	Version	Remark
1	2023. 5. 5	Liu	V1.0	Initial release version
2	2023. 10. 20	Liu	V1.1	1. Instructions for increasing current 2. Modify the layout
3	2023. 12. 17	Liu	V1.2	1. Modify the page number 2. Description of modifying the sound
4	2024. 1. 4	Liu	V1.3	1. Correct the working current

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1、Overview

1.1 Product Overview

YS19-X and YS20 series are high-precision voltage (current) noise sensors. YS19-X is a voltage type, supports 0-5V or 0-10V output, and the operating voltage is 12-25VDC. YS20 is a current type, supports 4-20mA output, and the operating voltage is 13-25VDC.

This sensor uses a round tube stainless steel shell, which is rust-resistant and high temperature resistant, and is equipped with an L-shaped bracket for easy installation.

2、Technical parameters

Project	Parameter description
Product Name	Noise detection sensor
Product model	YS19-5, YS19-10, YS20
Operating voltage	12-25VDC (voltage type), 13-25VDC (current type)
Operating current	18.2mA (@24.0V voltage type), 19.3mA (@24V.0 current type)
Interface method	YS19-5: Voltage type 0-5V, YS19-10: Voltage type 0-10V, YS20: Current type 4-20mA
Measurement range	30-130dB
Frequency range	31.5-8kHz
Power calculation	A
Resolution	0.1dB
Accuracy	±1.5dB
Response time	100ms, 250ms, 300ms, 400ms (the factory default is 400ms, and other response times
Operating	-20--80°C
External	110 (Length) × 20 (Diameter)mm

3、Wiring instructions and installation

The external interfaces are all three-wire systems. When used, you only need to connect the positive power supply (blue wire), negative power supply (yellow and green wire) and connect the noise voltage (current) signal (brown wire) to the input terminal of the collector.

Wire core	Illustrate
blue	Power supply positive pole
Yellow and	Negative power supply
Brown	Noise voltage (current) output

3.1 Sensor and bracket positioning hole size



4、Sonic pressure value calculation instructions

4.1 Voltage type sound pressure calculation instructions

The range of the noise sensor is 30–130dB and the resolution is 0.1dB. For easy calculation, the value is expanded by 10 times. It can be considered that the sound pressure interval length is:

$$L=130*10-30*10=1000.$$

For the 0–5V (YS19–5) signal output interface, the voltage value corresponding to every 0.1dB sound pressure value is: $\Delta=(5-0)/L=0.005V$.

Assuming the collected voltage is 1.372V, the corresponding decibel value can be calculated as:

$$(1.372/\Delta)/10 + 30.0\text{dB}=57.4\text{dB}$$

Similarly, for the 0–10V (YS19–10) signal output interface, the voltage value corresponding to 0.1dB sound pressure is: $\Delta=(10-0)/L=0.01V$.

Assuming the collected voltage is 4.58V, the corresponding decibel value can be calculated as:

$$(4.58/\Delta)/10 + 30.0\text{dB}=75.8\text{dB}$$

4.2 Current type sound pressure calculation instructions

The range of the noise sensor is 30–130dB and the resolution is 0.1dB. For easy calculation, the value is expanded by 10 times. It can be considered that the sound pressure interval length is:

$$L=130*10-30*10=1000.$$

For the 4–20mA (YS20) signal output interface, the current value corresponding to the sound pressure value for every 0.1dB is: $\Delta=(20-4)/L=0.016\text{mA}$.

Assuming the collected current is 6.453mA, the corresponding decibel value can be calculated as:

$$((6.453-4)/\Delta)/10 + 30.0\text{dB}=45.3\text{dB}$$