ZHD-WZ1-*-1
Temperature vibration transmitter user 's manual (Analog quantity type)

SIBO.X INDUSTRIAL CO.,LTD.
Add: No. Building 1, No. 1, Jingshi Road, Cicheng Town Industrial Park, Jiangbei District, Ningbo City, Zhejiang, China
https://www.sbxsun.com
Email: info@sbxsun.com
Tel: +86-15958288207

Table of Contents

1. Product introduction

This product is a high-performance, low-power, anti-interference and composite vibration sensor developed and produced by using high-performance MEMS chips and embedded technology, temperature sensing technology and vibration sensing technology. The products are widely used in the on-line measurement of vibration of rotating equipment such as motors, reducers, fans, generators, air compressors, centrifuges, pumps, etc. in the coal mine, chemical industry, metallurgy, power generation and other industries.

The shell is made of stainless steel as a whole, and can be installed with threads if conditions permit. The standard threads on the metal shell can be quickly connected with the installation position. The magnetic suction installation method can also be used to eliminate the problem of drilling on site and make the installation more convenient.

2. Product selection

ZHD-					Company code
	WZ1-				Temperature vibration (vibration single shaft+temperature) transmitter (Frequency response range 10-1600HZ)
	WZ1A-				Temperature vibration (vibration single shaft+temperature) transmitter (Frequency response range 10-5000HZ)
		I20-			4-20mA current output
		V05-			0-5V voltage output
		V10-			0-10V voltage output
			1-		First generation appearance
				M8	M8 external thread
				M5	M5 external thread
				CX	Magnetic suction installation

3. Functional features

1. The product adopts high-performance MEMS chip, with high measurement accuracy and strong anti-interference ability;
2. The product provides thread installation and magnetic installation;
3. Single shaft vibration speed can be measured;
4. It can measure the surface temperature of the motor;
5. 10-30V DC wide voltage power supply;
6. Protection grade IP67;

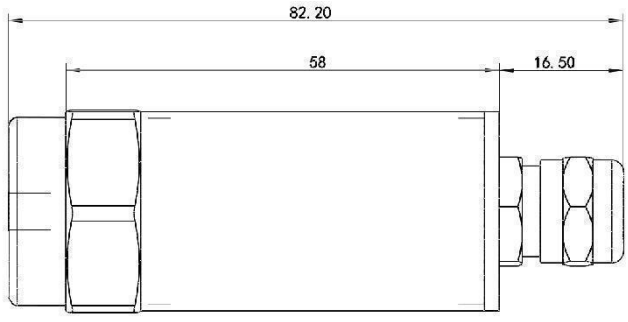
4. Description of technical parameters

power supply	DC10-30V	
Maximum power consumption	Current output	1.2W
	Voltage output	1.2W
Degree of protection	IP67	
Frequency range (HZ)	10-1600 or 10-5000（Optional）	
Vibration measurement direction	Single axis, perpendicular to the direction of the measuring surface	
Transmitter circuit operating temperature	-40℃~+60℃，0%RH~80%RH	
Measuring range of vibration speed (mm/s)	0-50	
Measuring range of surface temperature (℃)	-40~+80	
Vibration velocity measurement accuracy (mm/s)	±1.5% FS（@1KHZ，10mm/s）	
output signal	Current output	4-20mA
	Voltage output	0-5V/0-10V
Load capacity	Current output	≤600Ω
	Voltage output	Output resistance≤250Ω
Detection cycle	real time	

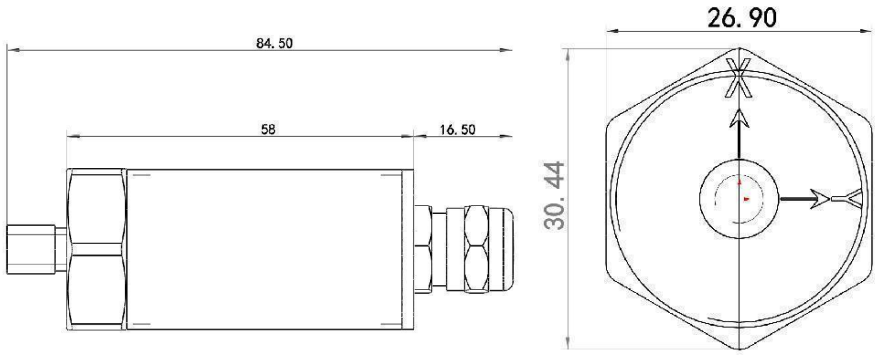
5. Installation Instructions

5.1 External dimensions

Installation dimension of magnetic suction



Thread installation size



Equipment list：

■ 1 main equipment

■ Certificate, warranty card, etc

5.2 Installation and wiring instructions

Installation Instructions

The thread is installed with m8 * 1.25 * 10, m5 * 7 external thread and other specifications. In addition, there are magnetic suction installation methods。

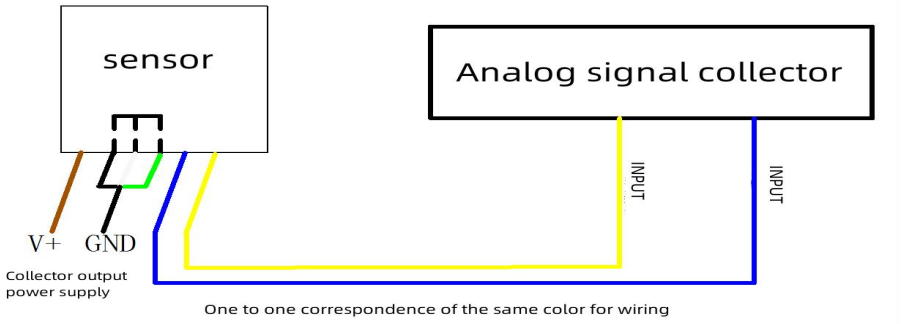
Power supply and output interface wiring

Wide voltage 10~30V DC power input. Only 24V power supply can be used for 0-10V output type equipment. The standard configuration of the equipment is 1 independent analog output. At the same time, it can adapt to three wire system and four wire system.

Specific wiring (please refer to Appendix 2 for products purchased before December 15, 2022)

	Linear color	explain
Power Supply	brown	V+（10~30V DC）
	black	V-
signal communication	blue	Temperature OUT+
	green	Temperature OUT-
	yellow	vibration velocity OUT+
	white	vibration velocity OUT_

Example of wiring mode



Schematic Diagram of Three wire System Connection

6. Calculation method

6.1 Conversion calculation of current mode output signal

Example: measuring range: 0-50mm/s, 4-20mA output. When the output signal is 12mA, calculate the current vibration speed value.

The span of this vibration speed range is 50mm/s, expressed by 16mA current signal, (50 mm/s)/16 mA=3.125 mm/(s • mA), that is, the current of 1 mA represents the vibration speed change of 3.125 mm/s.

The measured value is 12mA-4mA=8mA, 8mA * 3.125mm/(s • mA)=25mm/s.

25mm/s+(0)=25mm/s, current vibration speed 25mm/s.

6.2 Conversion calculation of voltage type output signal

Example: measuring range: 0-50mm/s, 0-10V output. When the output signal is 5V, calculate the current vibration speed value.

The span of this vibration speed range is 50mm/s, expressed by 10V voltage signal, (50mm/s)/10V=5mm/(s • v), that is, the voltage 1V represents the vibration speed change of 5mm/s.

The measured value is 5V-0V=5V, 5V * 5mm/(s • v)=25mm/s. 25mm/s+(0)=25mm/s, current vibration speed 25mm/s.

6.3 Common problems and solutions

No output or output error

Possible causes:

1) The PLC calculation error is caused by the range corresponding error. Please refer to the technical indicators in Part I for the range.

2) Wrong wiring mode or wrong wiring sequence.

3) The power supply voltage is incorrect (24V power supply for 0-10V type).

4) The distance between the transmitter and the collector is too long, causing signal disorder.

5) The PLC acquisition port is damaged.

6) Equipment damage.

Appendix 1

ISO2372 equipment vibration standard is applicable to all kinds of motors, fans, pumps, machine tools, etc.This product can detect the three-axis vibration speed in the range of 0-50mm/s, and is applicable to vibration test and fault reduction.

Vibration range	ISO2372 Equipment Vibration Standard			
	Equipment category			
unit（mm/s）	Class I	Class II	Class III	Class IV
0.71	A	A	A	A
1.12	B	A	A	A
1.8	B	B	A	A
2.8	C	B	B	A
4.5	C	C	B	B
7.1	D	C	C	B
11.2	D	D	C	C
18	D	D	D	C
28	D	D	D	D

Class I	Small equipment below 15KW	A:	good
Class II	15-75KW medium equipment	B:	Acceptable
Class III	Large equipment installed on hard foundation	C:	be careful
Class IV	High speed equipment with rotating speed higher than natural frequency	D:	not allow

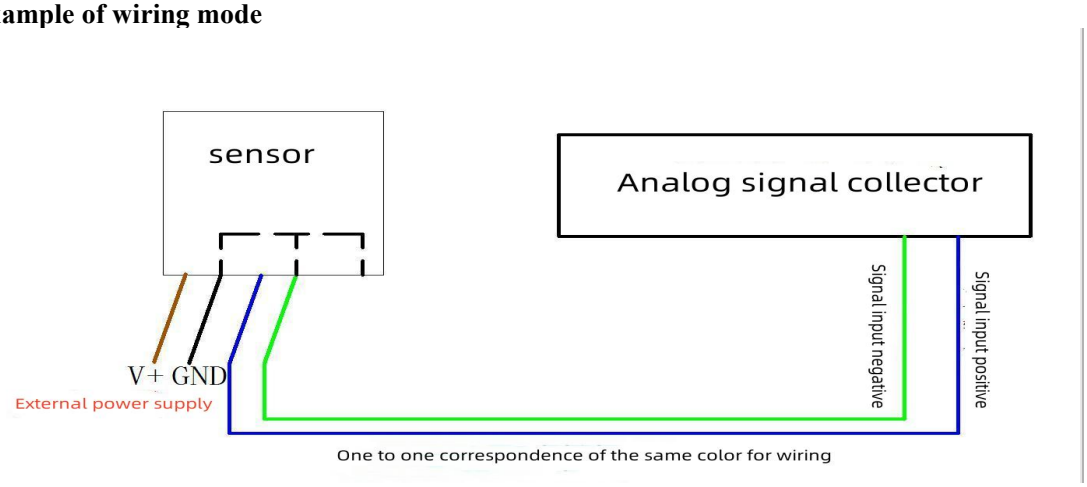
Appendix 2

Applicable to products purchased before December 15, 2022

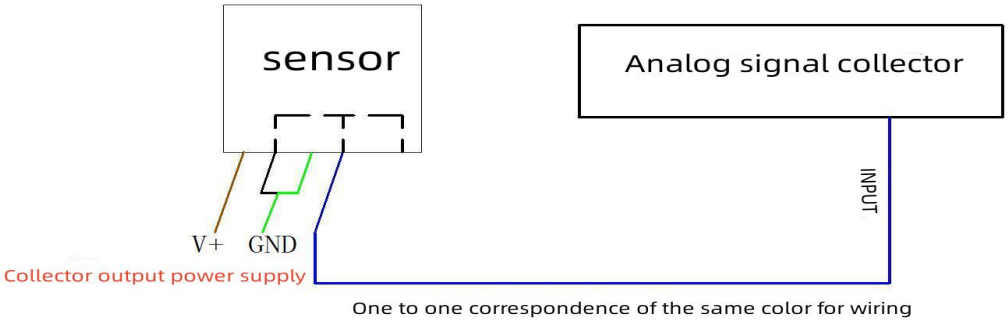
Specific wiring

	Linear color	explain
Power Supply	brown	V+（10~30V DC）
	black	V-
signal communication	blue	vibration velocity OUT+
	green	vibration velocity OUT-
	yellow	reserve
	white	Please use it under the guidance of our staff

Example of wiring mode



Schematic Diagram of Four wire System Connection



Schematic Diagram of Three wire System Connection