



兴沃链条全球链传动产品领先供应商

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ENTERPRISE INTRODUCTION

企业简介

兴沃机械是全球链传动产品领先供应商，产品涵盖链传动各个应用领域。在中国、德国、波兰、日本拥有五个先进的生产制造基地，并在法国、德国、荷兰、泰国、英国、匈牙利和美国设有区域销售中心，形成了链传动产品全球研发、制造、营销和服务网络。已向全球市场提供超过 12000 个品种。

兴沃机械在中国有两个生产基地，占地面积超过 47000m²，拥有员工 678 多人，其中各类专业技术人才 57 多人。按产品应用领域建立了多个专业化制造事业部。兴沃在中国拥有国家企业技术中心，推动着产品与技术不断创新，持续地满足顾客的需求。

我们致力于向全球客户提供优质的产品和便捷的本地服务

Starmachinechina is a leading global chain drive product supplier with the widest product range. We have five state-of-the-art production bases and regional distribution centres and workshops in France, Germany, Netherlands, Thailand, UK, Hungary and the USA. Starmachinechina has built a network of global design, R&D, manufacturing, sales and market service. We have provided over 12,000 varieties of chains for the global market.

Starmachinechina has two production bases in China, covering more than 47,000 square metres, with over 678 employees, including over 57 people with various professional skills. We have created multiple professional divisions according to chain application. Starmachinechina has established a national certified Enterprise Technology Center in China to drive forward product innovation and continuously satisfy customer demand.

We concentrate on providing high quality products and convenient local service.



KR-939SB3 Type Three Parameter Combination Sensor Probe

Brief Introduction

The KR-939SB3 integrated three-parameter (oil temperature, oil level, vibration) combination probe is a versatile probe from the Star Machine KR-939 series, designed for the safety monitoring system of cooling tower fans. It features a non-bus structure for easy integration.

It can be directly connected to the "KR-939B3 Fan Safety Monitor" for monitoring a single device. Additionally, it can be used with various general-purpose secondary instruments or computer data acquisition and control systems (such as DCS, PLC).

This KR-939SB3 integrated probe is used for monitoring the safe operation of fan gearboxes. It integrates sensors, converters, and transmitter circuits for measuring oil temperature, oil level, and vibration signals. The probe directly outputs 4-20mA standard current signals corresponding to these safety parameters and can connect to various general-purpose secondary instruments or computer digital acquisition and monitoring systems.

For temperature measurement, the probe uses platinum resistance sensors and semiconductor integrated devices. Oil level measurement is based on thermal conductivity sensor principles. The vibration measurement employs a magnetoelectric sensor that directly captures mechanical vibration velocity signals. These signals are processed through amplifiers, band-pass filters, and true RMS converters to transform complex vibration waveforms into true RMS values. Finally, the voltage/current drive circuit generates a 4-20mA output.

KR-939SB3 probe features a compact, integrated, all-stainless-steel, corrosion-resistant design. It has long-distance anti-interference capability, good sealing, and anti-vibration and explosion-proof measures, enabling it to operate online for extended periods in harsh environments.

This integrated probe conveniently provides important parameters closely related to the safe operation of the monitored equipment. Thus, it is also well-suited for the direct safety monitoring of other rotating and reciprocating machinery. It is an essential vibration safety monitoring unit for modern industry, national defense, and scientific research.

Main Technical Performance and Indicators

- appearance and mounting structure:

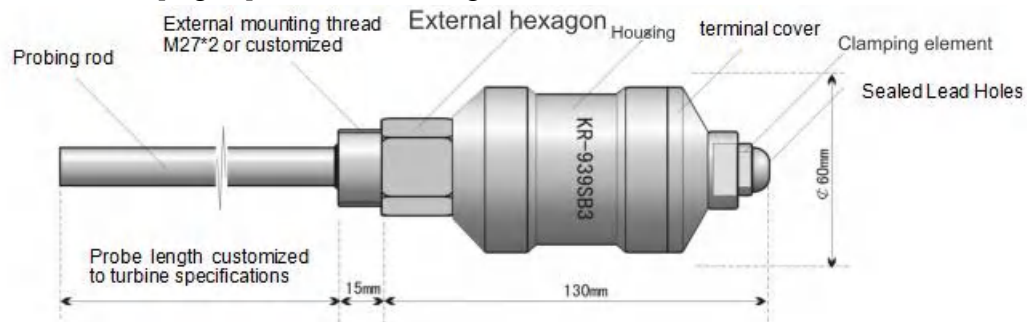
The KR-939SB3 integrated three-parameter probe features a fully enclosed

stainless steel waterproof design, weighing approximately 0.6 kg. It is installed in the threaded mounting hole of a fan gearbox using an external thread, with the probe rod inserted into the gearbox. This allows it to measure the temperature and level of the lubricating oil as well as the vibration of the gearbox, and transmit these signals.

Thread specifications and probe insertion depth must be specified at the time of ordering.

See [Fig. 1] for a schematic diagram of the external structure.

[Fig. 1] Schematic diagram of external structure



● Temperature Measurement Characteristics:

Lubricating Oil Temperature Measurement Range: 0 ~ 100 °C,

Temperature Measurement Tolerance: ± 1 °C.

● Oil Level Measurement Characteristics:

Measuring range of lubricant oil level: -10~40 mm (0mm indicates the oil level limit position when the gearbox is at its normal oil level),

oil level measurement tolerance: ± 5 mm.

Stable preheating is required for about 2 minutes when the device is first powered up; the response damping time is about 1 minute; the measured medium must be a non-conductive medium.

● Vibration Measurement Characteristics:

Vibration measurement range: 0~20 mm/s,

The RMS (Root Mean Square) value of the vibration velocity is proportional to the measured output.

vibration measurement frequency band range: 10~1000HZ,

vibration measurement tolerance: ± 1 mm/s.

● Signal Output Characteristics:

Active current type output: DC/4 ~ 20mA, and passive resistive load is required.

Maximum load resistance measurement (including the internal resistance of the transmission line): $R_{max} = (V-15)/0.02$ (V is the supply voltage).

● Power supply characteristics:

Operating voltage: DC/24V±2V,
no-load voltage: DC/18V,
maximum protection voltage: DC/30V,
rated current: DC/80mA,
maximum instantaneous operating current: 150mA,
The probe has built-in voltage reverse polarity protection.

● Environmental Characterization:

Environmental temperature range: -20 to 80°C,
Environmental humidity range: 0 to 100% (ports sealed with 704 silicone rubber).

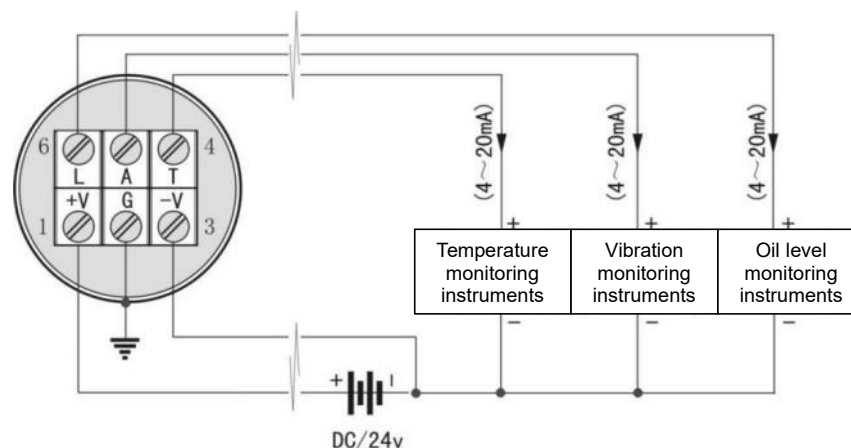
● electrical connection:

5-wire 6-terminal connection:

- 1# **+V**: +24V power supply;
- 2# **G**: connected with the shell can be connected to the shield;
- 3# **-V**: Public ground wire;
- 4# **T**: temperature signal output;
- 5# **A**: vibration signal output;
- 6# **L**: oil level signal output.

Typical wiring see [Fig. 2] Schematic diagram of probe wiring principle.

[Fig. 2]Schematic diagram of probe wiring principle

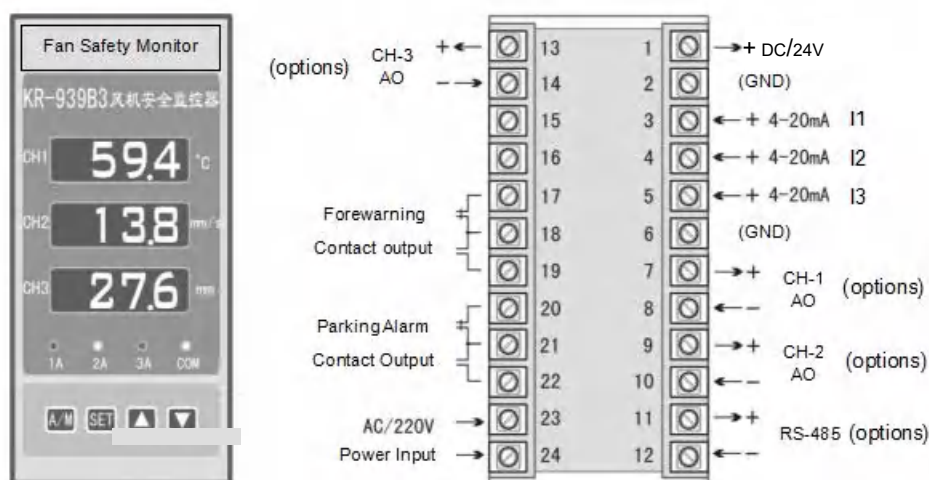


The probe can be optionally connected to the KR-939B3 wind turbine safety monitor, see [Fig. 3] KR-939B3 panel diagram, and [Fig. 4] probe and KR-939B3 wiring diagram.

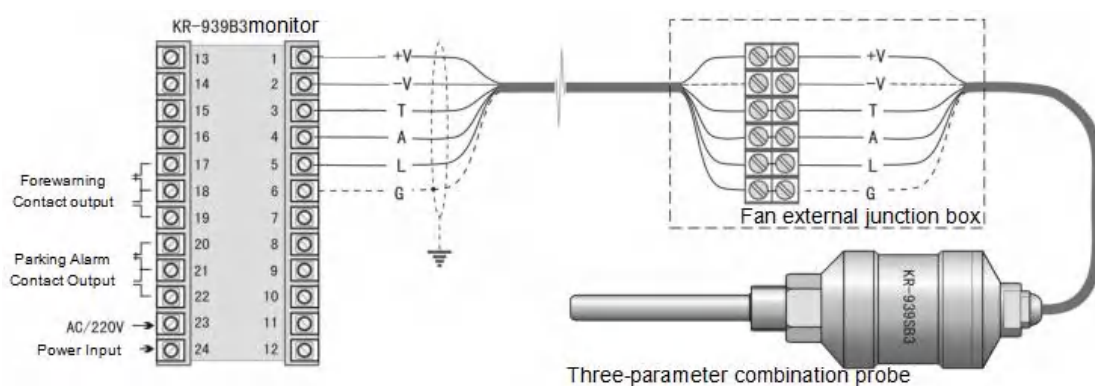
When the probe is used in connection with the distributed computer measurement and control system DCS, see [Fig. 5] and DCS-AI input module wiring diagram example.

When the probe is connected to a programmable logic controller PLC, see [Fig. 6] and the PLC-AI input module wiring diagram for an example.

[Fig. 3] KR-939B3 Panel Diagram

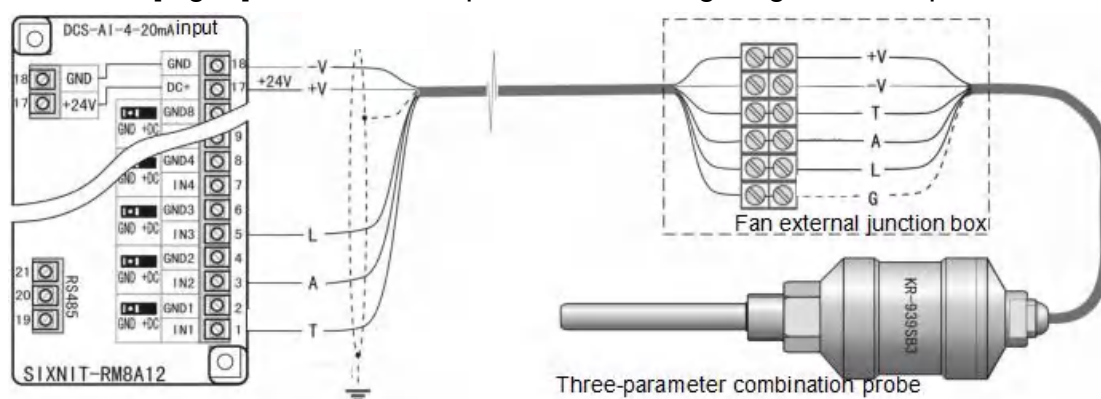


[Fig. 4] probe and KR-939B3 wiring diagram



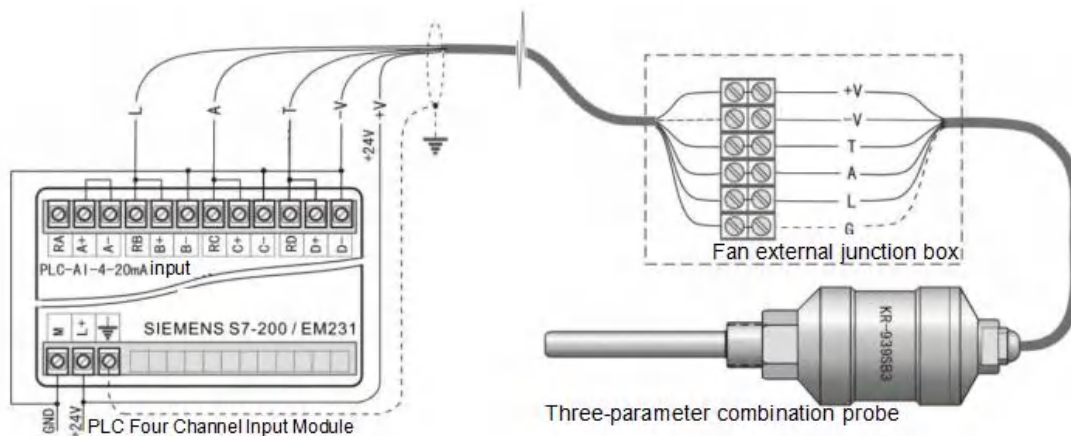
+V: Positive power supply -V: Public ground wire T: temperature A: Vibration
L: oil level G: screened ground wire

[Fig. 5] And DCS-AI input module wiring diagram example



+V: Positive power supply -V: Public ground wire T: temperature A: Vibration
L: oil level G: screened ground wire

[Fig. 6] and the PLC-AI input module wiring diagram for an example



+V:Positive power supply -V:Public ground wire T:temperature A:Vibration
L:oil level G:screened ground wire

● Leads and Maintenance:

The reference wiring specification of the probe cable is 5×0.3mm²/RVVP type five-core shielded cable, and the sealing outer diameter of the cable should be $\phi 6 \sim \phi 7$ mm.

Due to the high humidity environment in the wind turbine, the cable must be strictly sealed with silicone rubber! It is best for users to order a pre-packaged cable with a length of 10 to 15 meters from the factory before leaving the factory. During installation, the cable should be led out to the external junction box of the wind tube for connection.

Long-term operation or excessive contamination of the lubricating oil will lead to errors in oil level measurement. At this time, remove the probe and immerse the probe rod back and forth in a non-aqueous organic solvent to clean the oil stains, and the oil level will return to normal.

● electrical connection:

In explosive gas environments, users can choose explosion-proof products with corresponding explosion-proof grades, such as Exd II BT4. The housing grounding wire "G" of the explosion-proof probe must be well grounded.

When ordering KR-939SB3, please specify the model number of the equipment to be monitored, or the structure and installation dimensions of the equipment.

Star Machine also provides other automation measurement and control instrumentation products and related engineering services, welcome to inquire.

In order to avoid the trouble caused by poor sealing of the probe wiring on site, a five-core shielded cable is usually supplied in advance, and the cable wiring

color corresponds to the following:

Red: 24V; Black: COM; Yellow: temperature; Blue: liquid level; Green: vibration.

Note: Before wiring, disconnect the power first, and then wire. Or connect black: COM first, then connect red: 24V to avoid burning the probe.