Model: YD420 Dual-axis Vibration Monitor

1.Brief Introduction

YD420 intelligent shaft vibration monitor is a precision intelligent measurement and control instruments, widely used in electric power, petroleum, chemical and other departments. Through eddy current sensor, the instrument can continuously monitor and measure the axis vibration of turbine, fan and other rotating machine. It has alarm and shutdown control signal output, equipped with current output and RS485 interfaces, the instrument can connect with computers and other devices. The Monitor uses an 80×160×205 (mm) chassis, LED digital display, PVC color mask and light touch keys, and it has beautiful appearance, novel style, reasonable structure, simple installation, stable performance and reliable quality.

2.Main Function

2.1 With two channels, each channel can measure and display vibration amplitude.

2.2 With alarm protection function, when vibration amplitude exceed alarm set value, the alarm indicator light will on, and meanwhile output on/off signal at the rear of the panel to protect the monitored equipment.

2.3 User can arbitrarily set by pushing any buttons in the front of the panel if two level alarm setting value is in the measuring range.

2.4 With current output and RS485 interfaces which can connect with computers and other devices.

3.Technical Parameters

3.1 YD420 Intelligent Shaft Vibration Monitor

3.1.1 Signal Input: YD9800 eddy current sensor

3.1.2 Measurement range：0～200um

    Range can be determined according to users'needs

3.1.3 Accuracy: Linearity deviation ≤ ± 1% (full scale)

3.1.4 Display: 3 digits digital tube display

3.1.5 Frequency Response：0～5000Hz

3.1.6Current output: 4 ~ 20mA (can be adjusted according to users' requirements to 0 ~ 10mA)

3.1.7 Communication Interface：RS485

3.1.8 Alarm Contact Capacity：DC28V　3A

3.1.9 Working Environment: Temperature: -30 ℃ ~ 50 ℃ Relative humidity: ≤ 85%

3.1.10 Power Supply: AC 220VAC ± 30% 50Hz Power ≤ 20W

3.1.11 Dimensions: 80 × 160 × 150mm (H × W × L)

3.1.12 Hole Size: 76 × 152 (H × W)

3.2 YD9200 Eddy Current Sensor

3.2.1 Probe Diameter：φ8mm

3.2.2 Linear Range：2mm

3.2.3 Sensitivity：8V/mm

3.2.4 Linearity：2%

3.2.5 Frequency Response：0～5KHZ

3.2.6 Probe Length：55mm etc.

3.2.7 Mounting Thread：M10×1mm

3.2.8 Working Temperature：Probe:30℃～120℃

                           Proximiator 30℃～60℃

3.2.9 Power Supply：-24VDC

3.2.10 Dimensions：83×61×49mm(L × W × H)

4.Operation Instructions
5.

YD420 intelligent shaft vibration monitor shown in Figure one. It can simultaneously monitor vibration channel Ⅰand Ⅱ, upper part is channelⅠpart with 3 digital tube display, alarmⅠvalue instruction light , alarmⅡvalue instruction light, displacement button, add button, confirmation button, settings button, the lower half is Ⅱ channel part, with three digital tube display, alarmⅠvalue instruction light, alarm Ⅱ value instruction light.

4.1 Indication Light Instruction

4.1.1Channel Ⅰ "alarm Ⅰ" indication light: When the measured value exceeds the alarm set value Ⅰ, the lights on.

4.1.2Channel Ⅰ "alarm Ⅱ" indication light: When the measured value exceeds the alarm set value Ⅱ, the lights on.

4.1.3Channel Ⅱ "alarm Ⅰ" indication light: When the measured value exceeds the alarm set value Ⅰ, the lights on.

4.1.4Channel Ⅱ "alarm Ⅱ" indication light: When the measured value exceeds the alarm set value Ⅱ, the lights on.

4.2 Key Instruction

4.2.1 " " key: this is called "shift" key, press the button each time, the selected LED will move to left for one digit, selected digital tube flashes, cyclic shift.

4.2.2 "▲" key: this is called "add" button, number on the selected digital tube will increased by 1 for every press.

4.2.3 "E" key: this is called "Confirm" button, press the key after finishing parameter settings
Instrument enter into normal measurement state once storage parameters.

4.2.4 "S" key: this is called "Settings" button, press the button, and enter to the parameter setting state, setting alarm Ⅰ value and alarm Ⅱ value of channel Ⅰ and channel Ⅱ successively. Press the "S" button, the upper digital tube will circulating display "COL"、"COH"、"C1L"、"C1H"、"PPP" in turn, respectively indicate channel Ⅰ alarm Ⅰ value, "channel Ⅰ alarm Ⅱ value, channel Ⅱ alarm Ⅰ value, channel Ⅱ alarm Ⅱ value.

4.2.5 Parameter Settings

4.2.5.1Channel Ⅰ "alarm Ⅰ" value setting : Click "S" key, channel Ⅰ display "COL", indicate the alarm Ⅰ
Value of the set channel Ⅰ, channel Ⅱ display the set current value, flashing bits shows this digit can be increased, each click of "▲" key will increase 1 on this digit, value cycling between 0 to 9 . Click the "" key can select 10 digits, each click of "▲" key will increase 1 on this digit , value cycling between 0 to 9. Press " " key can select 100 digits, each click of "▲" key will increase 1 on this digit , value cycling between 0 to 9.

4.2.5.2Channel Ⅰ alarm Ⅱ setting: continue to click "S" key, the channel Ⅰ shows "COH", indicating the alarm Ⅱ value of channel Ⅰ, channel Ⅱ indicate the current set value , setting for alarm Ⅱ value is the same as alarm Ⅰ value.

4.2.5.3Channel Ⅱ alarm Ⅰ setting: continue to click "S" key, the channel Ⅰ shows " C1L ", indicating the alarm Ⅰ value of channel Ⅱ, channel Ⅱ indicate the current set value , setting for alarm Ⅰ value of channel Ⅱ is the same as alarm Ⅰ value of channel Ⅰ.

4.2.5.4Channel Ⅱ alarm Ⅱ setting: continue to click "S" key, the channel Ⅰ shows " C1H ", indicating the alarm Ⅱ value of channel Ⅱ, channel Ⅱ indicate the current set value , setting for alarm Ⅰ value is the same as alarm Ⅰ value .

4.2.5.4Continue to click "S" key, channel Ⅰ display "PPP", then press "E" key, exit and save the

predetermined alarm value into the normal measurement state.

5.Installation

Figure: Wiring Diagram forYD420 Intelligent Shaft Vibration Monitor

5.1 Wiring instructions for YD420 shaft vibration monitor rear panel

5.1.1 Line Ⅰ

-24V:-24V DC power supply, connect with proximitor VDC side of YD9800 eddy current sensor.

IN: signal input side,，connect with proximitor input side of YD9800 eddy current sensor.

Current -: 4 ~ 20mA current output negative terminal, and signal ground connected. External load ≤ 500Ω.

Current +: 4 ~ 20mA current output positive terminal ， external load ≤ 500Ω.

Alarm Ⅰ: relay output, normally an open circuit between two points, i.e., the resistance is infinite, when alarm Ⅰ lights on, the relay is close,the resistance between two points is zero.

Alarm Ⅱ: relay output, normally an open circuit between two points, i.e., the resistance is infinite, when alarm Ⅱlights on, the relay is close, the resistance between two points is zero.

5.1.2 Line Ⅱ

-24V:-24V DC power supply, connect with proximitor VDC side of YD9800 eddy current sensor.

IN: signal input side,，connect with proximitor input side of YD9800 eddy current sensor.

Current -: 4 ~ 20mA current output negative terminal, and signal ground connected. External load ≤ 500Ω.

Current +: 4 ~ 20mA current output positive terminal ， external load ≤ 500Ω.

Alarm Ⅰ: relay output, normally an open circuit between two points, i.e., the resistance is infinite, when alarm Ⅰ lights on, the relay is close, the resistance between two points is zero.

Alarm Ⅱ: relay output, normally an open circuit between two points, i.e., the resistance is infinite, when alarm Ⅱ lights on, the relay is close, the resistance between two points is zero.

AC220V: AC220V AC power connected.

PGND, Can be connected with the earth, can't be connected with the signal ground.

5.2 Installation for YD9800 Eddy Current Sensor.

5.2.1 Composition for YD9800 Eddy Current Sensor.

Eddy current sensor system consists of the probe, extension cable, and proximitor , struction of proximitor as figure 3：

VDC: DC-24V power supply connected, attached with YD420 intelligent shaft monitor rear panel "-24V" terminal
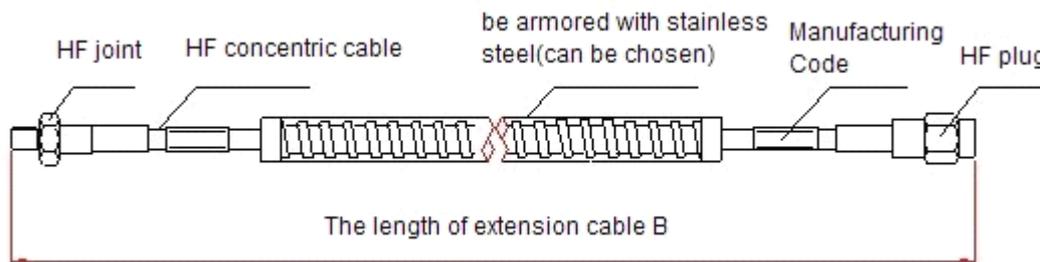
Output: is-4V ~-24V voltage output, and connects with "IN" terminal of YD420 intelligent shaft vibration monitor rear panel.

Ground: DC-24V power supply together with -4V～-24V voltage output , connects with "current -" terminals of
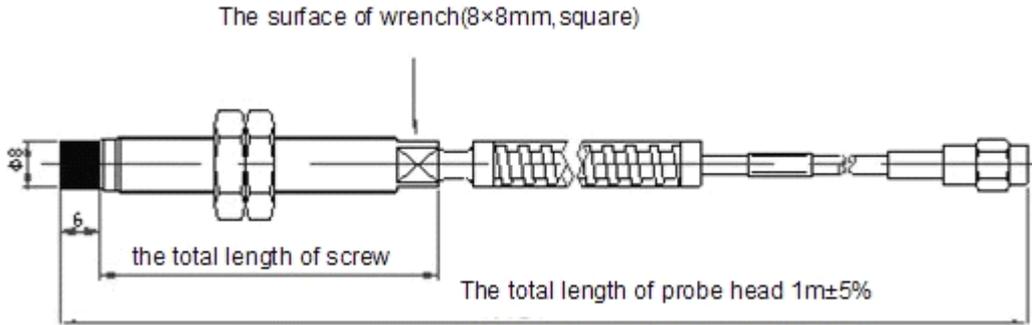
YD420 intelligent shaft vibration monitor rear panel.

SMC mother seat on proximitor connect with high-frequency cable of eddy current sensor.

Probe is usually consist of coil, coil skeleton, shell, high-frequency cable, high-frequency connector, typical structure shown in figure.

Extension Cable Length A = 4 m or 8 m ± 10%

The surface of wrench(8×8mm,square)

the total length of screw

The total length of probe head 1m±5%

Φ8 Probe Shape Schematic Diagram

5.2.2 Probe installation requirements: Influence range of eddy current produce by probe coil is about 3 times as probe coil diameter, so detected metal surface should be 3 times as probe diameter. Other metal objects can't exist between the 3 times detected metal surface and probe; otherwise measurement accuracy will be affected. If above requirement can't satisfied, re-adjustment should be done to the whole system according to real status. The instrument can not use if the detected mental smaller than 2 times as the probe diameter.

testing plate

shaft

Fastening nut

probe head

bracket
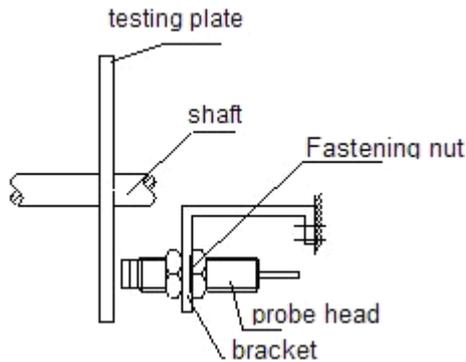
Installation Diagram For YD9800 Sensor Probe

Probe should be fix on the unit by frame, see figure 6, the frame is designed by the user and it should rigid enough to avoid deformation cause by vibration, probe must fix firmly on the frame, loose is not allowed. During the site installation, the space between probe and detected metal surface is confirmed base on the output characteristics of YD9800 eddy current sensor and the display range of the monitor, the displacement on the product verification book and the installation space required by voltage characteristics. For probe installation, space can be confirmed by measuring the output voltage of the probe after separate transmission installation. Do not twists the eddy current coil on the probe while installation, high frequency cables can not be twisted off and do not remove the plug arbitrary to avoid damage.

5.2.3Installation Of Proximitor

Proximitor and the unit should be insulated on electric, users better to add a proximitor protection box to protect the proximitor . Fix the proximitor in the iron box through the insulation board, and then fix the iron box on the frame or Iron railings. Temperature on the installation site should lower than 60 degree with ventilated and small vibration environment. Three-core shielded cable can be applied to connect proximitor and monitor, the length can reach about 10 meters, and the shield layer should be grounded in the central control room.

5.2.4 Installation For High-frequency

High frequency cable is applied between proximitor and probe, total length of the cable is 8 meters or 4 meter. (User should confirm when place the order). The length of the cable can't change   arbitrary, otherwise it will influence the measurement accuracy. Cable position should be fix after installation to

avoid unnecessary damage, and also metal hose can be added for protection. Required by the installation or use, middle of 8 meter or 4 meter high-frequency cable can connected with high frequency connector, the connector must floating at fixed time, that is connector can't connected with rack or the earth on the electric, otherwise it will cause interference, so during the installation, high frequency connector must seal by insulating material.

5.3 Installation for YD420 Intelligent Shaft Vibration Monitor

YD420 intelligent shaft vibration monitor can be installed on the cabinets of the control room

6. Remarks

6.1 During production, full measurement range is 200um, alarm Ⅰ value set as 50um,alarm Ⅱ value set as 80um.

6.2 Quality assurance for one year,durable maintenance and repair.