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Model: YD470 CW/CCW Rotation speed monitor

Brief Introduction:

Under most cases, machine axis only one rotation direction, so only need to monitor the machine rotational speed, and for some operation of the machine, for example, in the period of machine turn on/off, the rotor rotate to the opposite direction might happen suddenly. These kinds of incidents will extremely serious damage the machine. Therefore, identification and stop protection is essential for monitoring. Different comprehensive monitoring and protection system should be equipped with for different rotating machinery. Thus we can effectively protect the economic operation of the machine under various conditions.

YD470 CW/CCW Rotation Speed Monitor indentify and protect axis reverse rotation of the machine, it operate during the machine rotation speed monitoring.

It can receive input signal of the rotational velocity transducer from two directions, and make the phase comparison via signals from two directions then determine the direction.So it has function of rotation speed monitoring and protection, and also judgment and protection for reverse rotation, it is a multifunction monitoring instrument. Input signal of the instrument is from two directions of the eddy sensor . Generally, non-contact sensor probe should be installed with appropriate interval along the radial direction in the shaft bulb place or notch or speed gear plate.

Facing the sensor body, two sensors install into a certain angle, certain application requirements is needed , like modulus quantity , teeth quantity and tooth distribution of the measuring plate or measuring tooth. Users should note appropriate sensor should be applied according to measuring requirements for different machine and field condition. Users can refer our sensor selection manual, YD9100 series sensor is the special sensor to match this instrument.

1.Main Function

The instrument is both for speed measurement, display, and also for speed and reverse warning alarm.When one of the two input sensors fails, it will automatically switchto another sensor to measure the rotational speed, and in the meantim0.e make a alarm instructions (point out which direction of the sensor is failure), and automatically block reversal protection relay malfunction.

Measurement Rang Selection:
Sub-file option is available within 0 to 9999 rev / min speed range, user can have the instrument custom-made while selecting instrument and factory will preset the meter.

Display Function:
Rotational speed measurement value, alarm values, function information is show on the display window. Instruction light of different color on the panel coordinate with instrument measurement status give signals. Within full measurement range, the accuracy of the measurement exceeing 1%.

Alarm Function:
Proving one stop alarm set point, users can set the stop alarm value of the rotational speed by themselves, and meanwhile the instrument light on the panel can instruct the “stop” alarm, wiring terminal Provide relay output.

Reverse Alarm Function:
Provide a “reverse rotation “alarm set point, when the machine reverses, the instrument will alarm at the first time, and instrument light on the panel will instruct “reverse rotation “alarm, wiring terminal provide relay output.

Alarm Reset Function:
When alarms, alarm reset is divided into self-locking and automatic reset; while self-locks, alarm status keeping all the way, “reset” key should be pressed after monitoring status is normal, while self-reset, alarm status will relieve automatically after monitoring status is normal. Users can select one of the ways while selecting the instruments

Self-diagnostic Function
Any input system breakdown, like probe break, wiring fault can be detected, while one of the wiring of the two input sensor breakdown, it will automatically transfer to another one to measure the rotational speed, it will issue a warming indication at the same time (point out which way of the sensor go wrong), to avoid error action for reverse protection, it will automatically cut off reverse protection circuit.

Sensor Power Supply Current Limit Protection:
If the sensor power is short circuit in the course of usage by accident, current limit ≤ 30mA,it will not

produce sparks and it suitable for the safe requirement of flammable and explosive occasion.

Record Output Function :

There are 4~20mA analog signal output on the wiring terminal, measurement range which corresponding with the record output can be set in parameter setting function.(F2), users can adjust by themselves, output terminals are designed with short circuit protection function.

Pulse Output Function:

Pulse Output is 0~5V square-wave signal， pulse output equals per minute revolutions of the measured staff multiplied by the gear amount of the measured gear tray .

Speeding and Reverse Rotation Alarm Response Time:

Speeding and Reverse Rotation Alarm Response Time is very fast, response delay time <50ms.

Parameter Setting Function:

Instrument function using and parameters can be set by the key on the panel; it is smooth operation, convenient and quick.

2. Technical parameters:

Input:Sensor input: YD69 Hall rotation speed sensor;

Input point: 2 point;

Input Impedance: 50KΩ

System Input/Output Transfer Accuracy：

Record Output ＜ ±0.3% 25℃

Digital Display ＜±0.1% 25℃

Frequency Reponse: 1~18KHz

Record Output: 4~20mA（Load resistance ≤500Ω）or 1~5V（Load resistance ≥1KΩ）

Buffered Output: Sensor signal output from the rear of the panel terminal after amplified by the buffer.

Sensor Power Output: 24VDC±10%, 15mA，Short Circuit limite≤30mA

Alarm ： Alarm Set Point: Alert 1 point , Stop 1 point

Relay Status: Often Lost Power

Alarm Relay Output: 2 pair of relays（Alert、Stop）（Always off, always on）

Output Capacity Of Electric Shock: 250VAC/7A or 30VDC/10A

Alarm Reset: Automatic reset or self-locking

Environment:Operating Temperature: -20 ~ 70℃

Storage Temperature: -30 ~ 85℃

Relative Humidity: 20 ~ 95% Non-condensing

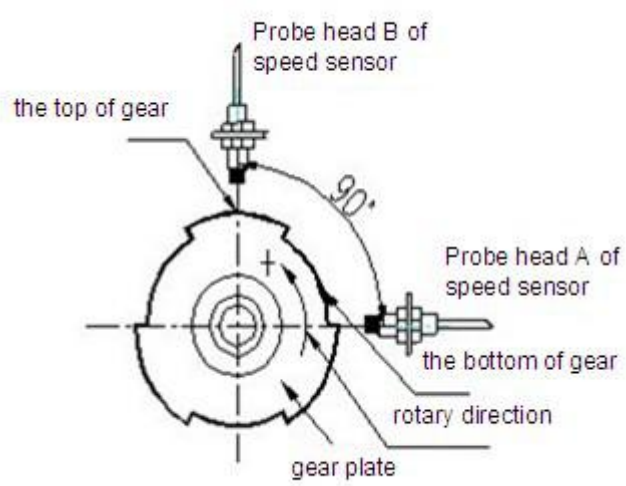
Work Power: 220VAC, 50HZ Power ≤ 10W Weight: 1.5Kg

3. Instrument Working Principle Description

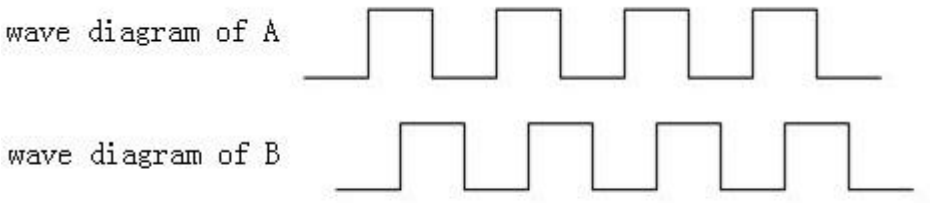
3.1 Measurement and Speeding Alarm Principle Description

Use equal accuracy measurement principle to proceed the fast high-precision measurements for the rotation speed signal of the two channels, every 0.5 seconds for a rotation speed display, and make comparison with the alarm set value, when the speed exceeds the alarm set value, it will start speeding alarm function.

3.2 Reverse Alarm Principle Description

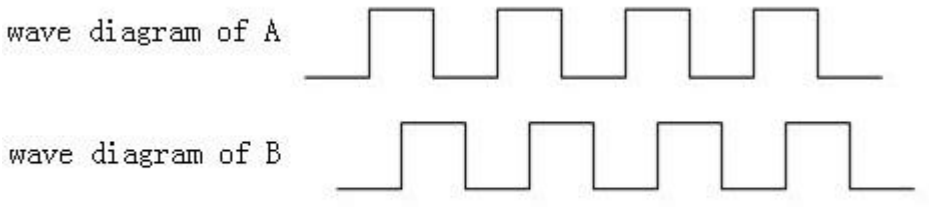


As shown above when the mechanical rotate to the counter-clockwise direction (assumed to be forward) , the sensor waveform is as following：



As shown above Sensor A wave line surpass Sensor B wave line 90 degrees.

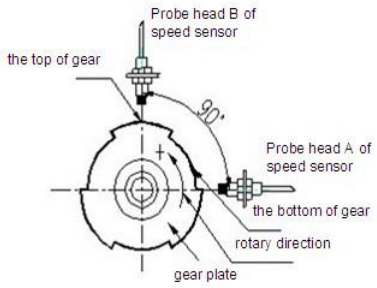
When the mechanical rotate to the clockwise direction (assumed to be reverse) , the sensor waveform is as following：



As shown above Sensor B wave line surpass Sensor A wave line 90 degrees.
According to identify the different phase of the speed waveform while forward/reverse rotation,you can judge if it is forward or reverse rotation to take protect measurement.

4. Installation of The Sensor

While using the reverse rotation monitoring protection function, please read the reverse rotation protection principle description carefully, refer below drawing to install the sensor.



The drawing of sensor installation

Because measurement speed plate gear amount is different, the angle formed between the probes will be different; the center of Sensor Probe B is required to target the radial axis of the gear top. Take an example of the speed measurement plate with three teeth.A 90 degree angle will be formed by two probes if installed like this way. Installation space between the integrated eddy current sensor probesisL≤1.3mm , effective measurement are available.

5. Forward/ Reverse Rotation and Sensor Installation Relationship :

While definition direction is forward rotation and sensor probe A is installed in the connected place like drawing illustrated, It is forward rotation if the definition is opposite with above direction， then corresponding relationship between sensor and input A,B of the instrument is opposite , Sensor A connect with B-IN of the instrument, Sensor B connect with A-IN of the instrument.

To improve the reliability of the monitoring, reverse rotation monitoring has certain requirement for the speed measurement plate induction gear:

1.Modulus gear on the speed gear ≥1.5, gear distribute evenly,。
2. Gear top and gear valley should as equal as possible.

6.Model Selection

Model selection instruction for YD470B shaft displacement monitor

YD470-A□□-B□□-C□□-D□□-E□□

A measuring range	B Induction number	C Alarm status	D Alarm-delay	E Recording output
0010：100r/m 0600:6000r/m 1000:10000r/m AA:Special customized	01:1 Gear 60:60 Gear	00：Self-locking 01：Self-recovery	00：No-delay 13:Alert 1 sencond, dangerours 3 seconds	00:4~20mA 01:1~5V 02:485 Communication protocol

Note:

Instrument function equipped with special function requirement, additional design and development is required. “Non-standard “ will mark behind the model number, professional user manual will be attached with instrument.