

TDS-K dual channel speed measurement and control device



◇ Overview

The speed measurement and control device adopts PIC single-chip microcomputer processing technology to achieve high precision, strong function, high reliability and easy operation . The main performances are as follows:

1. It is only related to the frequency of the measured signal, and has nothing to do with the amplitude of the signal voltage. Therefore, it is especially suitable for the measurement of low residual voltage signals and has strong anti-interference ability.
2. The device integrates a frequency meter, a tachometer and a speed relay. Moreover, the accuracy is determined by the crystal oscillator, so the speed value does not change due to the environment and operating conditions, which improves the reliability.
3. The device can save and memorize the current maximum speed of the unit, which brings great convenience to the unit's load rejection test and accident overspeed analysis.
- 4 , using the gear plate photoelectric signal or generator voltage transformer signal input to perform frequency measurement, broadening the scope of measurement.
5. The measurement and control adopts the return difference method to eliminate the jitter of the output relay. For the waveform distortion caused by the brake of the unit, the blocking method is used to prevent the output from malfunctioning. According to the operation requirements of the power plant, the twelve groups of speed percentage values can be conveniently set in the specified range at the site.
6. The output has twelve relay controls and one D/A analog. The unit's speed, speed percentage or frequency is displayed by a four-digit LED digital tube. The working status of the twelve-way relay is indicated by twelve LED light-emitting diodes.

7 , can achieve single-machine numerical control, can also be networked with the computer interface to achieve group control. It can improve the quality of power generation and save water resources. It is a high-tech product for measuring and controlling the speed of hydropower station generator sets. It is also an advanced product for measuring and controlling the rotational speed of various industrial machinery in modern industry, reaching the advanced level at home and abroad.

◇ **Features and functions**

1. It adopts switching power supply, AC and DC; the voltage can be universal from 110V to 220V , and its applicability is strong;
- 2 , analog signal output (4~20mA , RS485 signal output) according to user needs;
- 3 , automatic reset function, if there is a crash, the device automatically re-opens, immediately resets and puts into normal operation, and does not affect the relay output signal;
4. The unit stores the maximum value (highest frequency, percentage, and speed) of the unit after the start-up operation, providing a basis for accident analysis;
- 5 , with a standard slot structure, easy to install;
- 6 , automatic detection, high-definition LED digital display unit frequency, speed, and can calculate the percentage of frequency; accurate and reliable, easy to observe;
7. Set the setting value of each set point in the range of 0~100Hz to set the control value and center frequency of each point to adapt to different measurement and control requirements of different types of unit frequency (50Hz is set at the factory);
- 8 , indicated by: an input signal from the 0% Ne to 200% Ne rises in the process ,reaches the lamp does not light the lamp 1 and the second set value, to the lamp 3 , 4 , 5 , 6 ,7 , 8 , 9 , 10 , 11 , 12 set value in turn, the light is on and the corresponding output relay action, when the input signal drops, the lights 12 , 11 , 10 , 9 , 8 , 7 , 6 , 5 , 4 , 3 are extinguished in turn , the light is off At the same time, the corresponding output relay is reset. And with the return lock function, the return time is set by the user within the set time of 0~200 seconds according to the unit brake requirement (the factory has been set to 30)second);
- 9 , E² PROM data protection, all set values can be modified within the specified range, automatically saved after setting, can be saved without loss after power off;

- 10 , can detect the tooth plate signal and frequency signal at the same time;
11. The rated speed can be set on site according to the actual data, and the applicability is strong.

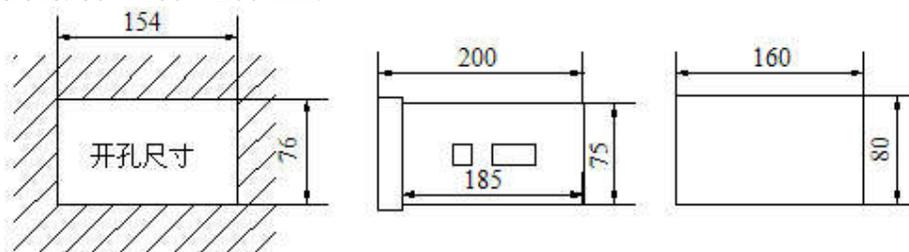
◇The main technical operation parameters

- (1) Working environment: temperature 0~40 °C;
- (2), working power: DC / AC110V ~ 220V & plusmn; 10% ;
- (3) Input voltage: the gear plate sensor voltage is DC12V , and the generator residual pressure type PT signal is 0.5~250VAC ;
- (4), measurement accuracy: 0.1% ± 1 word;
- (5), measurement signal input: tooth plate photoelectric frequency or generator residual voltage or PT frequency;
- (6), measuring range: 0.5~100 Hz (generator frequency); 60~6000r/min (toothed plate photoelectric frequency);
- (7), digital display content: 4 -digit 0.56" LED switch display speed, frequency, percentage;
- (8), maximum memory: can record the maximum value of speed, percentage, frequency, etc., which can be cleared by the user;
- (9), output contact capacity: 1A/220VAC , 1A/220VDC ;
- (10), analog signal output: 4~20mA (corresponding to 0%~200% Ne of the unit speed);
load capacity ≤ 500Ω ;
- (11), communication output: interface mode - standard serial two-way communication interface RS485 ;
Baud rate - 2400 , 4800 , 9600 , 19200 internal free settings;
- (12), power consumption: ≤ 15W ;
- (13), instrument weight: ≤ 1.5Kg ;
- (14), 12-way speed control setting: Each set value can be set from 0% Ne to200% Ne , but it must be strictly set according to the characteristics of the generator. The 12-way initial value center speed is 5% Ne , 35% Ne ,80% Ne , 90% Ne , 95% Ne , 100% Ne , 110% Ne , 120% Ne , 130% Ne ,140% Ne , 150% Ne , 160% Ne (adjustable)
Each point can be set by the user within the range currently specified.

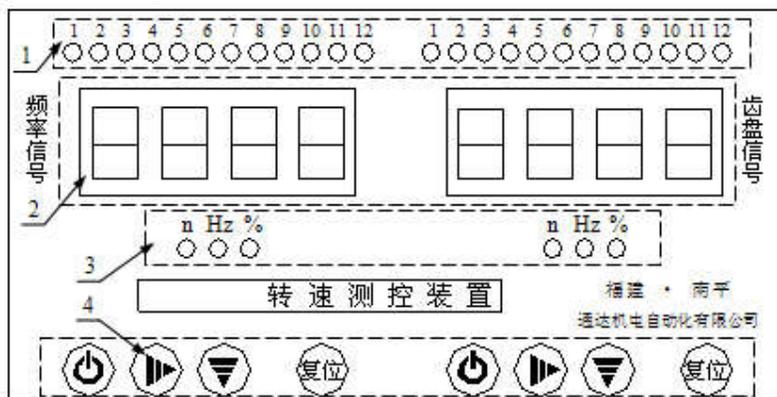
继电器	设定范围	应用参数
1路	5%Ne	停机复归
2路	35%Ne	制动投入
3路	80%Ne	调相失去电源
4路	90%Ne	同期装置投入
5路	95%Ne	同期装置投入
6路	100%Ne	同期装置投入
7路	110%Ne	机组过速
8路	120%Ne	机组过速
9路	130%Ne	机组过速
10路	140%Ne	飞逸转速
11路	150%Ne	飞逸转速
12路	160%Ne	飞逸转速

◇ Installation size

- 1 Installation dimensions are shown below: 2 Standard slot installation method.
- 3 Mounting plate opening size 76×154 mm , the device is inserted from the hole of the disk, and the mounting screw can be tightened from the rear end.
- 4 Dimensions: $80 \times 160 \times 200$ mm.



◇ panel description

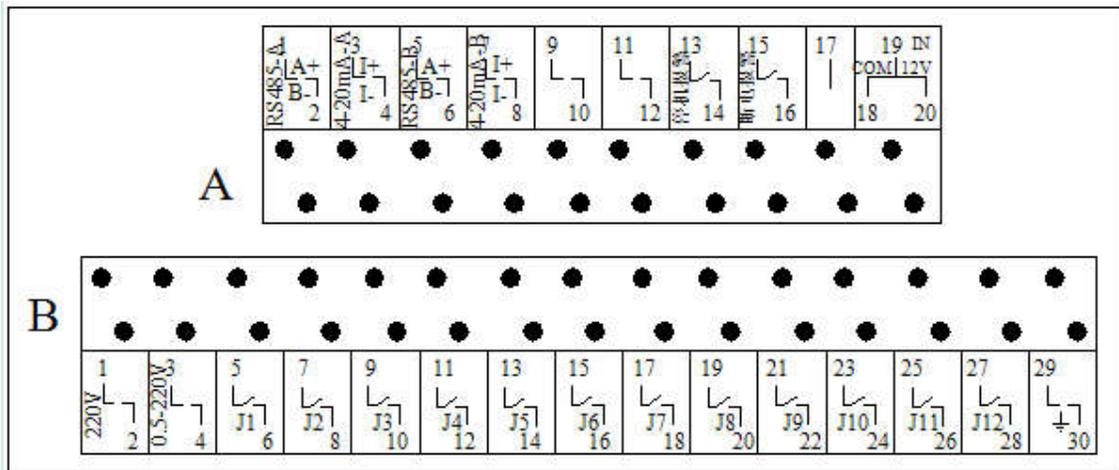


名称		内容
1 继电器 动作 指示 灯	灯 1-灯 12	输入信号由 0%Ne 向 200%Ne 的上升过程中，达到灯 1 和灯 2 设定值时不亮；达到灯 3、4、5、6、7、8、9、10、11、12 设定值时依次点亮；当输入信号下降时灯 12、11、10、9、8、7、6、5、4、3 依次熄灭。且具有返程锁定功能，被锁定在设定时间内（出厂时已设定为 30 秒）。当灯 12 设为蠕动报警时，达到门限值 3%以下灯 12 亮。
2 显示 器	LED 数字 显示器	性质指示灯对应的实时测量值
		性质指示灯对应的记忆最大值
		在参数设定状态下，显示参数符号或设定值
3 性 质指 示灯	n 灯	LED 显示转速
	Hz 灯	LED 显示频率
	%灯	LED 显示百分比
4 操 作 键	 参数设定选择键	按序变换参数设定模式和设定值； 记录已变更的设定值
	 设定值右移键	变更设定时，用于增加数值； 密码输入时，用于右移更改位置
	 设定值减少键	变更设定时，用于减少数值；
	 复位键	进入测控状态

◇ Model description

TDS-	数显仪表系列					
	代号	装置类型				
	D	频率信号转速测控				
	C	齿盘信号转速测控				
	K	双通道转速测控				
		代号	控制路数			
		01~12	1~12 报警路数			
			代号	输出信号		
			0	无输出		
			1	RS485 ModbusRTU		
			2	4~20mA 模拟量		
			3	RS485 ModbusRTU 和 4~20mA 模拟量		
			4	特殊规格		
				代号	工作电源	
				1	AC/DC110V-220V	
				2	DC24V	
				代号	报警方式	
				0	无	
				1	断电报警	
				2	停机报警	
				3	断电报警+停机报警	
					A~Z	版本代号
TDS-	D	12	3	1	3	A

Back cover description



Terminal wiring instructions:

1. Power supply: DC/AC110V~220V is connected to terminals B1-B2 .
- Note: This device has no power switch. After the power is connected, it will run for a long time. Therefore, the wiring should be connected before the power is sent.
- 2 , the frequency of the signal RS485 communication contact terminals A1-A2 , chaining signal RS485 communication terminal fitting A5-A6 , (wherein A1 connection485A, A2 then 485B , A5 access485A, A6 is connected to 485B , the user must specify when ordering);
- 3 , the output frequency of the analog signal contact terminals A3-A4 , analog signal output from the spur terminal connected to the A7-the A8 , (wherein A3 is positive, A4 is negative, A7 is positive, A8 is negative, and the user must specify when ordering);
- 4 , the generator frequency signal is connected to the terminal B3-B4 , (if only the photoelectric sensor, the terminal B3-B4 needs to be shorted);
- 5 , terminal A18-A20 is connected to the photoelectric sensor, (where A18 common terminal COM , A19 signal terminal IN , A20 power terminal 12V are respectively connected to the photoelectric sensor lead line BU (blue), BK(black), BN (brown));
- 6 , the terminals A13-A14 then stop alarm output terminals A15-A16 connection failure alarm output (user must specify when ordering);
- 7 , the terminal B29 is grounded;
8. Terminals B5-B28 are connected to twelve pairs of speed output respectively. The factory settings are: “ J1~J12 ”Corresponding to 5% Ne , 35% Ne , 80% Ne ,90% Ne , 95% Ne , 100% Ne , 110% Ne , 120% Ne , 130% Ne , 140% Ne , 150% Ne ,160%

Ne center Speed (user can adjust the contact log and set value according to the site demand) , normally open output contact setting, when the speed rises to equal the set value, the contact closes, when the speed is less than the set value and the return difference, The contact is reset. When J12 is set to creep alarm, the corresponding threshold is 3%Ne . When the speed drops to the threshold, the contact closes. When the speed is greater than the threshold, the contact returns.