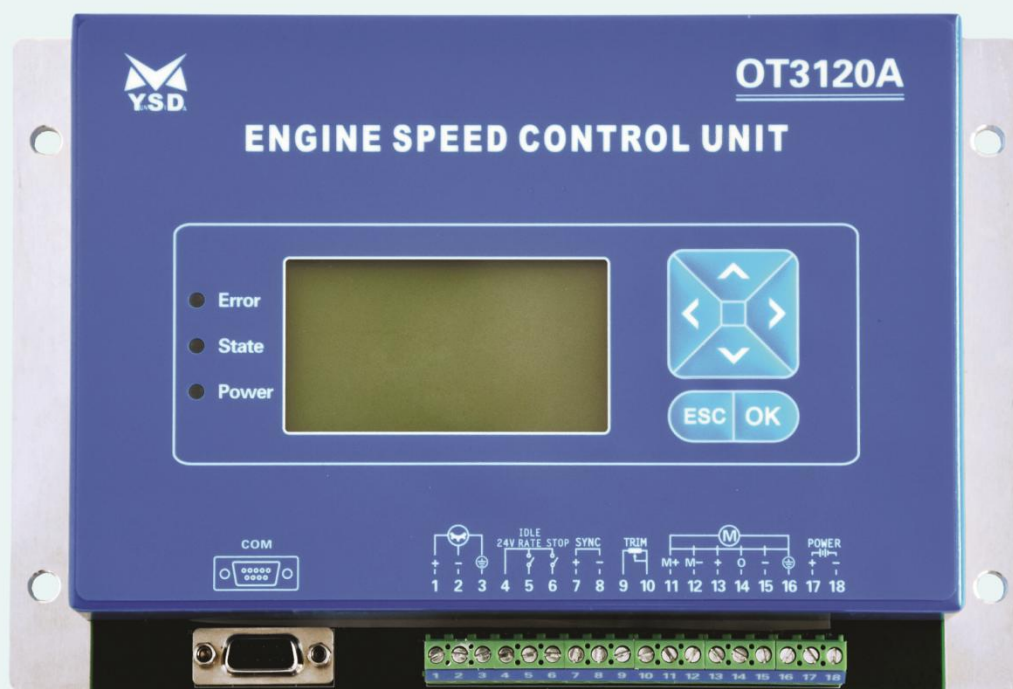


OT3120A

数显调速控制器

产品使用说明书



OT3120A

ENGINE SPEED CONTROL UNIT

— Product description

The OT3120A gas engine (power generation) control system mainly implements the speed regulation function. The steady-state and dynamic indicators of the speed control are routinely set for general parameters when leaving the factory. Most users or models can generally meet the requirements. If instability occurs, adjustment can be made.

二 Electrical parameters

- ◆ Power: 20 ~ 32V DC, 10A max
- ◆ Rated / idle speed range: 0 ~ 9KHz
- ◆ Synchronous control range: 0 ~ 5V
- ◆ Input device: 1 speed sensor input
 - 1 parallel port
 - 1 fine-tuning port
- ◆ Output device: 1 actuator output
 - 1 high and low speed switch
 - 1-way engine start-stop switch
- ◆ Vibration conditions: <80Hz
- ◆ Working temperature: -20 °C ~ + 70 °C
- ◆ Impact: 2G
- ◆ Protection level: IP65

☰ Instructions for use

3.1 Panel operation



3.2 Button and indicator function description

No	button	Features	use
①	OK	Set / confirm button	Enter the setting interface / parameter setting confirmation.
②	ESC	Back button	Menu return / parameter setting return.
③	∧	Up / increase	Scroll the screen and move the cursor up or increase the parameter value in the setup menu.
④	∨	Down / reduce	Scroll the screen and move the cursor down or decrease the parameter value in the setup menu.
⑤	<	Left / turn	Turn the screen to increase the parameter value in the setting menu.
⑥	>	Right / page	Turn the screen to decrease the parameter value in the setting menu.
⑦	Error	Error indicator	The indicator light is off under normal conditions; the indicator light flashes when a fault occurs.
⑧	State	Status Indicator	spare
⑨	Power	Power Indicator	The indicator is always on when the controller is powered on; it is off when the controller is powered off.

3.3 Instructions (These operating instructions are consistent with the common digital product identification, and ordinary users can operate without looking at the manual.)

- The menu consists of a setting interface and real-time data. The real-time data is the default interface. Pages are turned through the \wedge and \vee keys. The real-time data parameters are displayed only and cannot be changed. The setting interface is entered through the OK button. After the setting is completed, press the ESC key to return to the real-time data. interface;
- Real-time data display: working status, current speed, actuator position, actuator current; the display interface is paged through the \wedge and \vee keys, as shown in the figure:

<Display>

```

Real-time data
working status    high speed    actuator current    0.2
current speed    1500
actuator position    200
  
```

- Parameter setting consists of engine setting, speed setting, system information, etc.; \wedge and \vee keys select the setting bar, the selected menu is highlighted, press OK to enter the menu, ESC key returns to the upper menu, as shown in the figure:

<setting>

```

parameter Setting          speed setting
engine setting             check Error code
speed setting              remove Error code
system information         Language
  
```

- The engine setting consists of idle speed, rated speed, flywheel teeth, etc. At the initial entry, the idle speed is selected and highlighted. Press the \wedge and 切换 keys to switch the selected field. When the OK key is pressed, the number is highlighted, indicating To modify the number, press \wedge to increase the number, \vee to decrease the number by 0.1 / 1; $>$ and $<$ step 1/10 of the number. After the setting is completed, press OK to save the corresponding parameters to the system. Press the ESC key without saving the parameters, as shown in the figure:

<engine setting>

engine setting	engine setting	engine setting
idle speed 800	Over speed 1800	starting time 3
rated speed 1500	Min drag 20	up speed 5
flywheel teeth 159	success drag 400	Down speed 5

- The speed setting consists of high speed P, high speed I, high speed D, idle speed P, idle speed I, idle speed D, etc. When initially entered, high speed P is selected and highlighted. Press the ^ and v keys to switch the selected field. When the number is highlighted, it means that you can modify the number, press ^ to increase the number, v to decrease the number, step 0.1 / 1; > and < to step 1/10 of the number, after the setting is completed, Press OK to save the corresponding parameters to the system, press ESC to not save the parameters, as shown in the figure:

<speed setting>




speed setting	speed setting	speed setting
High speed P 200	Idle speed P 200	Min position 160
High speed I 20	Idle speed I 20	Max position 910
High speed D 100	Idle speed D 100	Thick position 300

speed setting	speed setting	speed setting
Position P 180	Current P 30	Protect current 3
Position I 370	Current I 40	Valve current 5
Position D 200	Current D 200	Max current 9

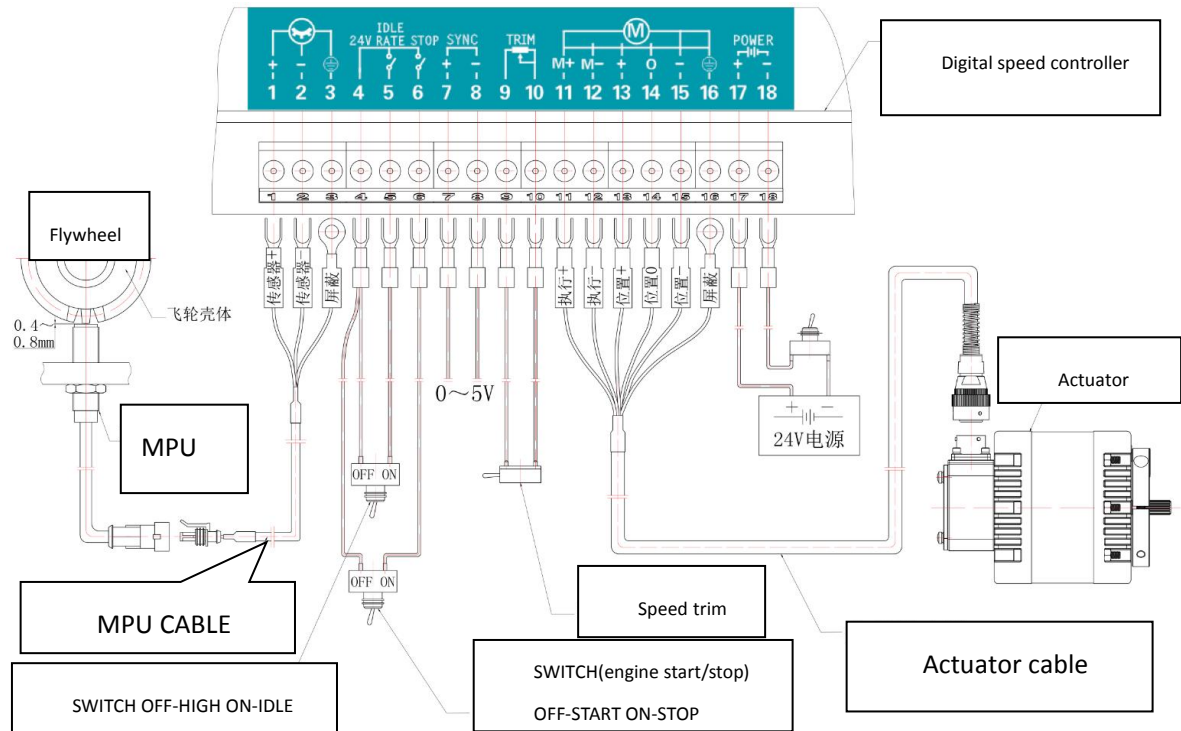
speed setting	speed setting
Self position check 500	Trim range 0
Self check switch 0	sample teeth 40
Syn range 0	PID 10

- The system information consists of the software version, as shown in the figure:
- View fault code Shows the cause of the controller's last fault. If there is a fault, the Error indicator flashes.
- Clearing DTCs After troubleshooting, manually clear the DTCs.
- Language selection consists of language, as shown in the figure:
Speed settings
Language English

四 Matching parts list

No	image	name	Quantity	Brand	Remark
1		Wiring harness	1	Autosun	
2		Speed sensor	1	C181568	
3		OT960S actuator	1	Autosun	

五 System installation



System installation diagram

PIN 1: MPU + PIN 2: MPU - PIN 3 : SHIELD

PIN 11: ACTUATOR + PIN 12: ACTUATOR - PIN 13: POSITION + PIN 15: POSITION -

PIN 14: ACTUATOR POSITION SIGNAL OUTPUT PIN 16: SHIELD

5.1 Speed sensor installation

The speed sensor uses a magnetolectric sensor. The function of the speed sensor is to collect the engine speed signal and input it to OT3120A in order to calculate the engine speed and control the actuator opening to control the amount of intake air or oil, thereby controlling the engine speed. This sensor is mounted on the flywheel housing and connected to the OT3120A through a two-wire connector. as the picture shows.

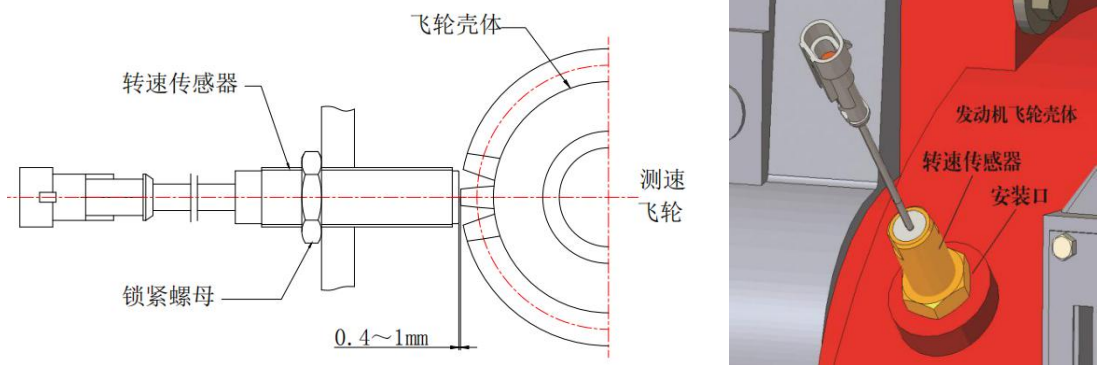


Figure 5.1.1 Speed sensor installation

5.2 OT3120A installation

OT3120A is installed on the engine or in the control room.:

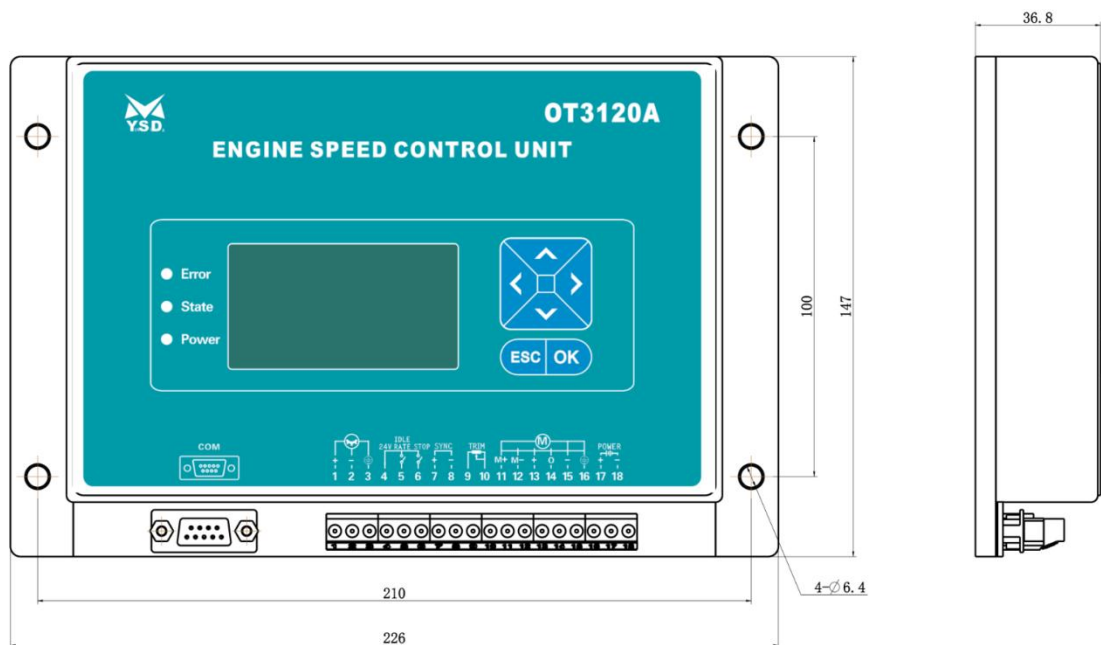
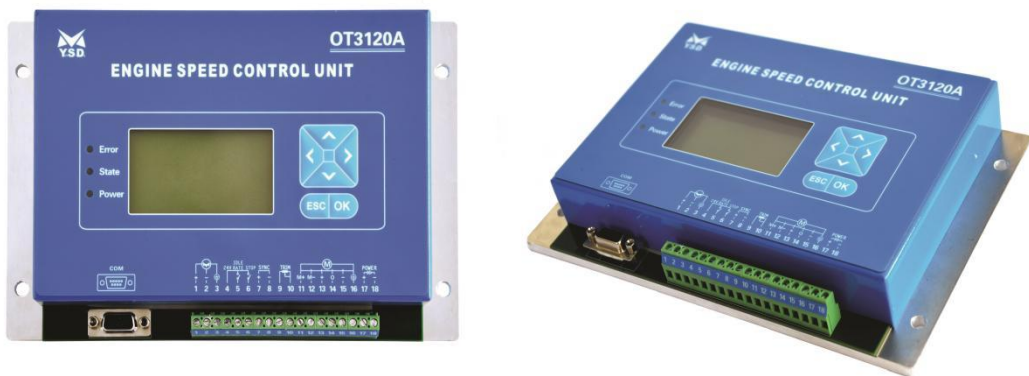


Figure5.2.1 OT3120A Installation dimensions



六 Possible failure phenomenon, cause and troubleshooting method

- Improper operation of the engine is usually the main cause of various engine failures. When a fault occurs, you should first confirm whether the engine itself is in a normal state. Therefore, the control system should be disconnected from the engine before determining the cause of the failure.
- The controller appears abnormal during installation, commissioning and use. Please refer to Table 1 for handling. If the fault is still not solved after checking and processing according to the following table, and it is confirmed that there is no problem with the engine system, please contact the manufacturer. Users who do not have the repair conditions should not disassemble blindly, so as not to expand the fault.

Table 1 Troubleshooting table

problem	Possible Causes	Solution
Engine cannot start	The gas pipeline is not open or the flow is insufficient	After checking the pressure reducing valve, the pressure of the KP gauge should be kept greater than 2KP. If the pressure drops to 0 when starting, increase the intake pressure or increase the diameter of the intake pipe.
	Throttle valve stuck	Remove the electronic throttle and push the throttle valve plate by hand to confirm that the valve plate can rotate flexibly. The return spring force can push the valve plate to the closed position. If stuck, it should be replaced.
	Controller has no power	Disconnect the plug from the controller. Measure the + 24V voltage on the + 24V power and ground pins.
	The parking switch is not turned off	Check the position of the parking switch to make sure it is reliable.
	Speed sensor installation gap is too large	Remove the speed sensor and reinstall it as instructed. Manually crank, check for interference.
	Open speed sensor signal connection	Disconnect the governor connector. When cranking, check that the voltage between the terminals of the speed sensor should be at least 1V or more.
	Broken Proportion Mixer Diaphragm	Replace the ratio mixer.
	Overspeed setpoint is configured incorrectly	Check the overspeed protection point configuration settings.

Engine overspeed	Overspeed setpoint is configured incorrectly	Check the overspeed protection point configuration settings.
	Improper transient gain setting	If overspeed occurs during transients, increase the gain to reduce overshoot.
	Improper start fuel limit setting	Reduce the rpm operating threshold or lower the starting oil volume position.
	Flywheel tooth number parameter is incorrect	Reset the parameters via software.
	Speed control throttle stuck	Overhaul the throttle.
Engine unstable	Speed PID adjustment is inappropriate	Use the service tool to adjust location dynamic parameters. Default in most cases.
	Ignition advance angle is not suitable	Adjust the ignition advance angle.
	The speed signal is intermittent or incorrect	Check the shielding of the speed signal. Check if the speed input line is free.
	Spark plug carbon deposits, high voltage lines rust	Replace with new spark plug and high voltage wire.

Fault code diagnosis instructions

Fault code number	Types	Description
E01- Cylinder abnormal	Camshaft position signal failure	The camshaft position sensor cannot find the number of cylinder teeth or the number of teeth of the disc and the control setting; please carefully check the specifications of the disc and the installation of the sensor, and whether the wiring harness connector is reliable.
E02- Interrupt exception	Software failure	The controller software is confusing and enters an abnormal state; please restart the controller or contact the manufacturer.
E03- Speeding off the fire	Engine speed overspeed	The engine speed exceeds the set overspeed speed, please check according to Table 1.
E09- Overspeed protection	Engine speed overspeed	The engine speed exceeds the set overspeed speed, please check according to Table 1. .
E10- Position abnormal	Electronic throttle position signal failure	The electronic throttle position signal cannot be detected, please carefully check whether the electronic throttle is intact and whether the wiring harness plug is in reliable contact.
E11- Current protection	Electronic throttle current output protection	The electronic throttle current is too large, please check carefully if the electronic throttle is stuck, and clean or replace the electronic throttle in time.



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