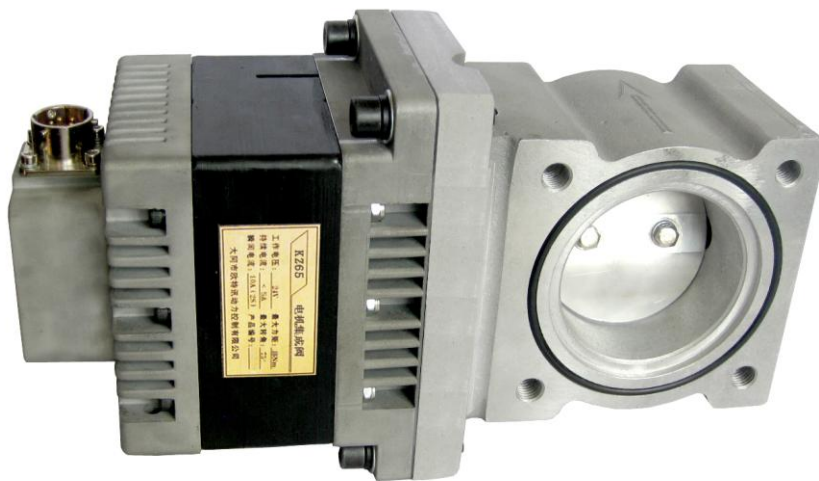




DaTong Autosun  
Power Control  
CO.,LTD

## Installation and use manual



**KZ65**

Motor integrated control valve

## 一、 Summary

### 1. 1、

Motor integrated control valve is the throttle valve of corner motor driven, referred to as the control valve。 The control valve works with the company's OT2022 model controller。

The main function of the control valve is to convert the position signal of the output of the speed controller to the designated position to control the gas supply. The input of the control valve motor is the electrical signal and the output is the mechanical rotation. Mechanical rotation (rotation) and the input into a proportional relationship.

Control valve motor requires a 20V ~ 32V DC drive from the controller, The drive should be able to provide continuous 10A current and the 20A peak current for 2 seconds.

### 1. 2、

**KZ (\* \*) series motor integrated control valve technical specifications:**

Power Supply: 24VDC

Output current: 10A continuous, 20A peak, lasting 2S

Output torque: Maximum 8Nm

ambient temperature: -40°C ~ +100°C

relative humidity: 38°C, 95%

Table 1-1 motor integrated control valve specifications

model	Valve plate diameter (mm)	The opening angle of the valve plate (deg)	Motor output torque (N.m)	weight (kg)
KZ65	Φ 65	75	8	4.5
KZ75	Φ 75	75	8	4.5
KZ85	Φ 85	75	8	5

KZ95	Φ 95	75	8	5
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### 1.3、

In accordance with the division of the diameter of the butterfly valve, KZ control valve series products have more than one model, KZ65 is one of the models

The outline dimensions and installation dimensions of the motor integrated control valve (KZ65) are as follows:

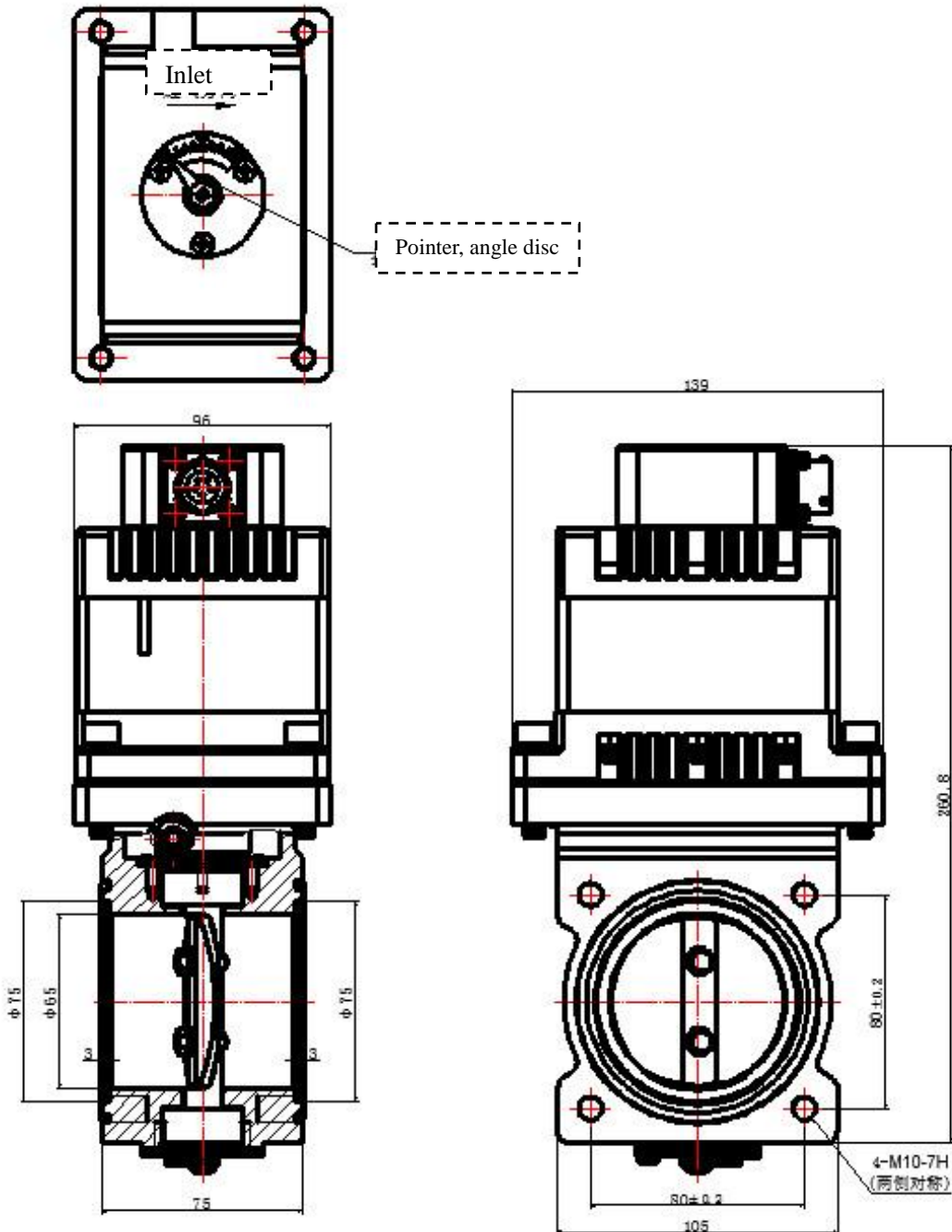


Figure KZ65 1-1 motor integrated control valve outline

## 二、 installation

### 2.1 Power

Power output should be low resistance (for example, directly from the battery output). The power supply connecting wire adopts the two core insulated and sheathed wire, and the ground wire is connected with a single conductor insulated and sheathed wire. Power lines and ground wires do not need to be shielded.

If the power supply is battery, the system should ensure that the system has an AC generator or other battery charging device.

When the engine is shut down, the electric control system will control the rotation angle of the motor to keep the minimum position. At this time, if the battery charging system is closed, it may cause the battery to run out of energy. In order to prevent the occurrence of such a situation, the electric control system should use the switch or relay to off. Switch or relay should be interlock with the engine start switch in case engine starts when electric control system power cut off.

### 2.2 Warning - over speeding

Do not use the method of closing the power supply of the controller to stop the engine running. Do not turn off the power supply on the controller during shutdown. All actuator position commands come from the controller, through the drive circuit, and finally to the corner motor. When the engine is running, closing the power on the controller can cause the engine to run fast.

### 2.3 Control valve installation

Control valves to be installed in the application of gas engine. The motor generates heat, especially under the condition of blocking or other maximum torque output. Therefore, the maximum operating temperature of the valve motor should not exceed  $100^{\circ}\text{C}$ 。

The installation personnel should consider the installation position of the engine body temperature, if the installation position of the engine body temperature is too high, should take

appropriate measures of heat insulation. Under the general conditions, the high thermal conductivity of aluminum and low carbon steel materials should be used as a mounting flange. Air flow freely through the control valve motor around will be conducive to heat. Therefore, the motor should be kept clean so as to improve the heat transfer.

Control valve plate and the inner wall of the valve body is not allowed to appear stuck phenomenon. Note: when the control valve valve plate in the minimum stop position, the gas engine should always be in a shutdown state.

Control valve plate rotation direction: In accordance with the valve plate opening direction and the engine gas supply system to increase the direction of the gas, Valve plate gradually open to increase the amount of gas supply of the engine, the valve plate is gradually closed to reduce the engine fuel supply. The system connection diagram of the KZ65 motor integrated control valve is shown in fig.:

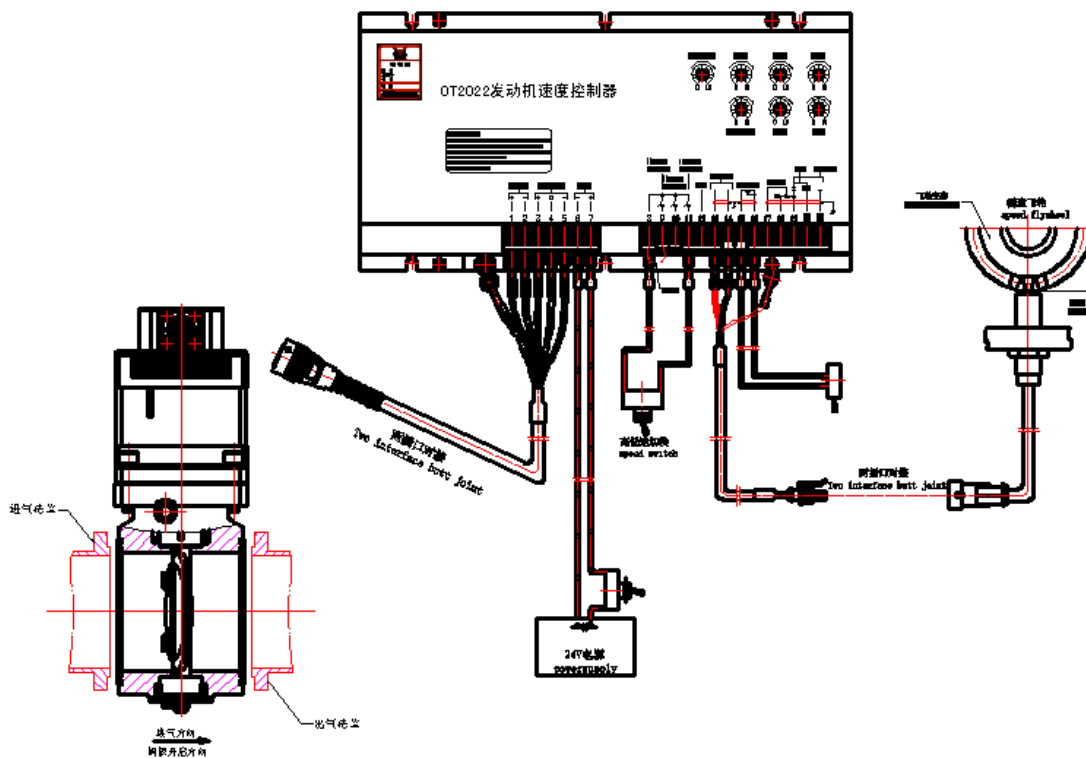


Figure KZ65 1-2 motor integrated control valve system connection diagram

## 2.4 Electrical connection

**technical requirement:**

1. Control valve motor DC power supply cable W1 using  $8\text{mm}^2$ 、 $6\text{mm}^2$  or  $4\text{mm}^2$  wire。 From the controller to the control valve motor, during which the total length of the cable must not exceed the maximum value shown in the following formula:

If using  $4\text{mm}^2$  wire, Formula: the controller to the corner motor cable length  $\leq 12.2\text{m}$ ;

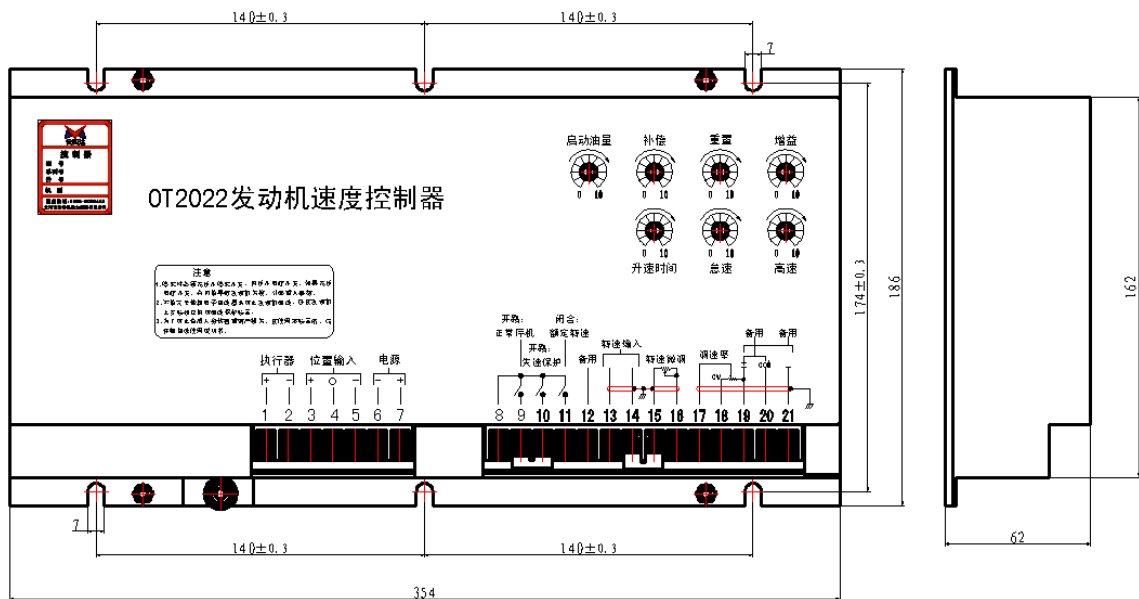
If using  $6\text{mm}^2$  wire: The total length of the control valve motor is multiplied by 1.6, as: 19.52m;

If using  $8\text{mm}^2$  wire: The total length of the control valve motor is multiplied by 2.5, as: 30.50m。

2. wire W3、W6 of Core line cross-sectional area is not less than  $1.5\text{mm}^2$  。

3. The drive circuit within the controller shall be able to supply the control valve motor with continuous 10A current and 20A peak current for 2 seconds.

4. In connection with the connecting wire of the external controller, the connecting piece should be installed first, and then connected with the connecting terminal and the connecting terminal.



## 2.5 Shielding wire

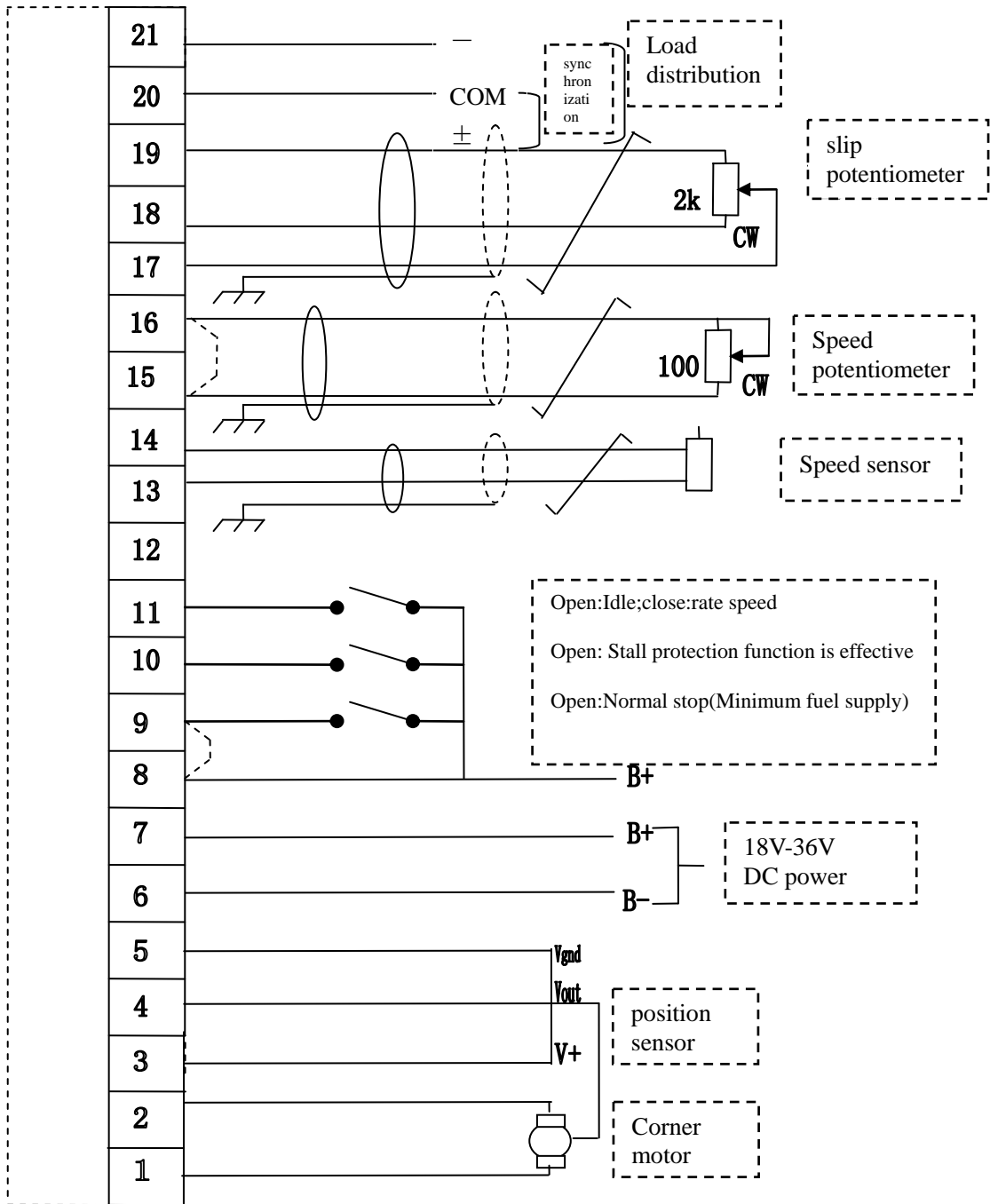
All signal lines should use a shield to prevent electromagnetic interference from nearby devices. All shielded cables should be twisted pair. Control valve motor of the two signal cable should be shielded wire: A cable that is a signal of a transmission position from a speed controller, The shield layer is only connected to the controller end, The other is to control the transmission of the valve motor and the position of the signal between the controller cable, The shield layer is only connected to the controller end, No electrical connection at the control valve end。 Notice that the shield is not connected to the base of the control valve motor. When wiring, remove the shielding layer of the wire should be as short as possible, no more than 5cm; Shielding wire should be grounded at one end, and the other end is open. When the signal shielding line is arranged, the cable should avoid the strong current.

When you need to use a shielded wire, the length of the cable should be intercepted as required, the installation of the following steps are as follows:

1. The external cable at both ends of the peel insulating layer, exposing the shielding layer.
2. With a sharp pointed tool carefully open the shielding layer.
3. Take out the inside of the wire, if the shield is woven mesh, twisted it into one group.
4. Connected to the internal conductor, stripping 6mm long bare.

5. When connecting to the system, the shielding line is considered as an independent circuit. If the shield wire is required to pass through the wire connector, the continuity of the shield line should be guaranteed.

In the serious electromagnetic interference environment, more shielding precautions should be taken. If the shield fails, it will be difficult to diagnose, and will cause the system can not work properly. Please install shield as required to ensure normal operation of control valve.



2-4 Electrical wiring diagram



## 三、 Troubleshooting guide

3.1 When the governor matching the normal operation of the engine, if the subsequent speed instability occurs, the majority problem is the engine or load reasons, rather than the governor. This speed change will lead to the output of the governor, the seemingly governor fault. If at this time to adjust the governor, trying to solve the problem, it will lead to more serious fault. This chapter gives a hint of this type of failure to ensure that the engine is running properly before the governor is adjusted.

If possible, separate the governor and the engine, to determine the cause of the failure, in turn, is to judge the governor, the engine, or the load.

Governor fault is usually caused by the installation failure. Carefully check all electrical connections, power supply, etc. before adjusting the control valve or the controller. Poor fuel system can also lead to instability of the engine speed.

For engines with spark plug ignition, ignition, high voltage coil and timing problems can cause the engine speed is not stable.

### 3.2 Common fault check

If the speed control system can not work normally, the controller can generally do the following basic testing.

- The power supply voltage detection: pin 6 (+)、7 (—) voltage should be 24VDC。
- Pin 9 voltage 24V。
- speed trimming pin 15、16 No speed trimming, Should be short connect. with speed trimming, Potentiometer no break.
- 10 - foot switch closed, adjust the start oil volume potentiometer, actuator arm movements, changing with the rotating potentiometer.

The other tests including the connection speed sensor, motor angle and oil supply system, engine fuel supply system.

### 3.3 Table of fault diagnosis

phenomenon	Possible reasons	processing method
Engine Can not start	1、Power supply polarity reverse or no power supply	Check the power supply voltage and polarity
	2、No motor position signal	Check the end pin 3 (+), 5 (-) the voltage should be 5V. Normally, the output of the sensor output voltage should follow the change, otherwise the sensor is bad.
	3、Set too low oil volume	Adjust the amount of oil

	4、 Non rotational speed signal	Check rotation speed sensor and connection
	5、 Speed setting is too low	Clockwise adjust the idle speed setting potentiometer
	6、 The minimum fuel oil contact is opened	Check 9 feet short tab is open or not
	7、 Connection between 15 and 16 feet is opened	Check speed Trimming Potentiometer or short tab is open or not
	8、 Controller damage	Replace the new controller
Start over speeding	1、 Speed up time is too fast	Proper clockwise adjustment of the speed up potentiometer
	2、 Rated speed setting is too high	Anti-clockwise adjust High speed potentiometer
	3、 Improper adjustment of PID parameters of controller	Appropriate increase in gain, reset.
	4、 Actuator connection problem	Check the connection and gear rod clamping stagnation
Engine Speed instability	1、 Improper adjustment of controller parameters	Re adjustment of PID
	2、 Rotating speed sensor installation clearance is too large or the flywheel ring gear wrong position	Check and re install
	3、 Engine overload	Reduced engine load
	4、 Shielding line connection is improper, electromagnetic interference	Check whether the shield line is properly connected
Engine Automatic stop	1、 Power interrupt	Check power supply and connection
	2、 Speed sensor signal interrupt	Check sensor and connection
	3、 Engine gas interruption	Clear the gas and remove the air in the pipe

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