

Speed Unit Control

DDE9800 instruction



DEUTZ(DALIAN) ENGINE CO.,LTD

1. Product introduction

New type DDE9800 speed control unit meets the developing control requirements of engines, which used PID adaptive control technology and advanced technology, such as international advanced SMT production, electric seal glue, salt and fog resistance, waterproof, etc. Type DDE9800 speed control unit is the electronic control unit of engine electronic governing speed system. Which make a quick accurate reflect to control the engine speed with the instant changeable load of engine. The control unit divided into DC24V and DC 12V (DDE9800-24V and DDE9800-12V), whose steady state speed rate can be adjusted, with the characteristics of drooping, power indicator function, battery voltage reverse protected, and the speed can be controlled accurately, having numerous of interfaces.

DDE9800 speed control units, electric actuators and tachometric transducers composed a speed closed-loop control system, which let the engine control in constant speed and stable operation.

DDE9800 speed control unit is simple to install, which is usually installed in the control boxes of compressor unit. And it is easy to set up. Through the adjustment "Rated speed" and "Idle", setting potentiometer can set up the desired speed of engine. What's more, it is easy to adjust, through the adjustment "gain" and "stability", setting potentiometer can let the engine running stable in the set speed.

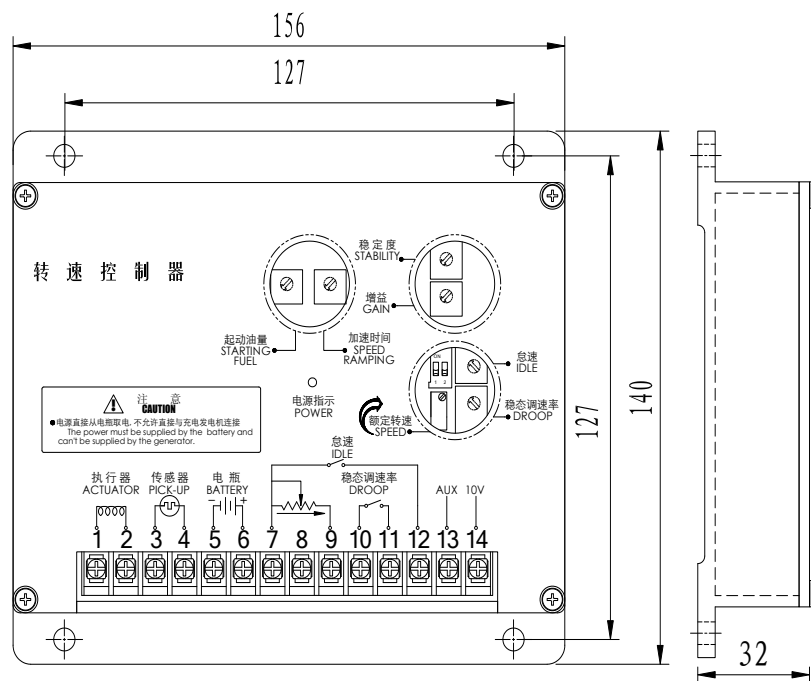
DDE9800 speed control unit is suitable for equipped with "A" and "B", "C" series actuators of SDE.YYEC.External installation

2. Basic Electrical Characteristics

Power supply voltage-----
- - 12V/24V
Power Consumption -----
--<0.1A

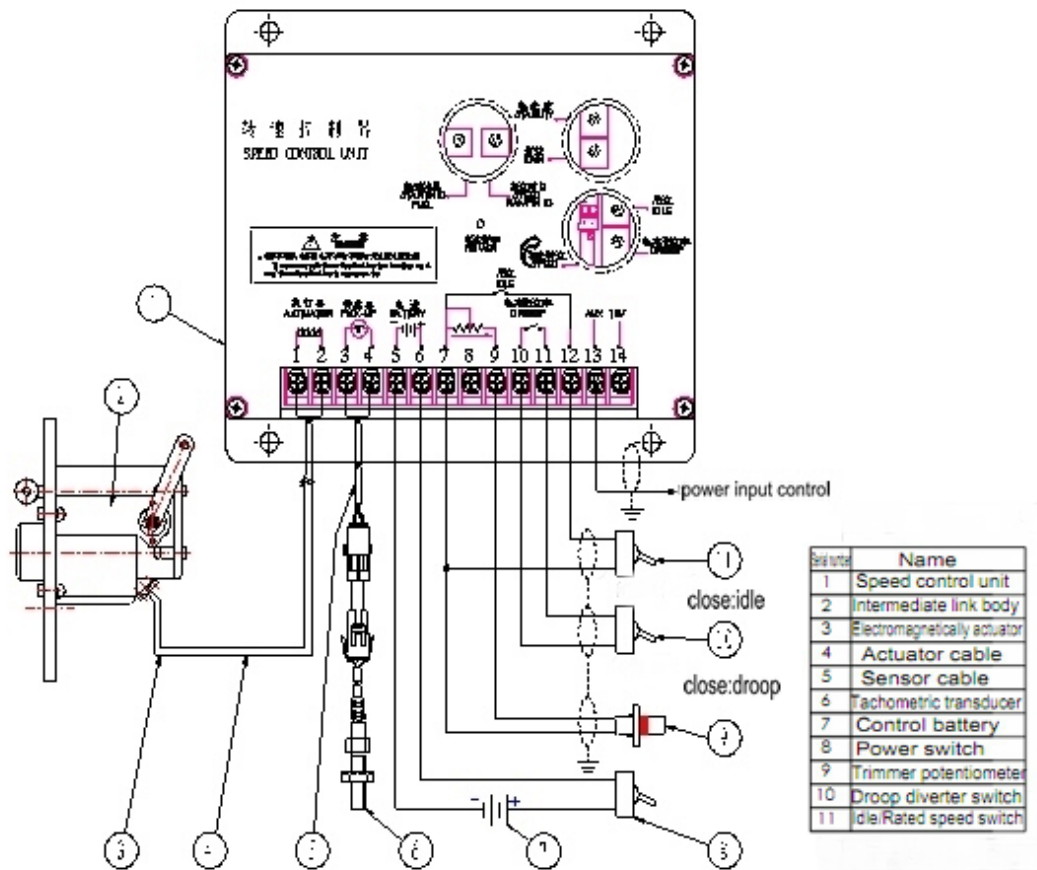
Speed fluctuation rate-----
 -- -0~10%
 Environment temperature-----
 - -40℃~+85℃
 Environment humidity-----
 -- - <95%

3.External installation

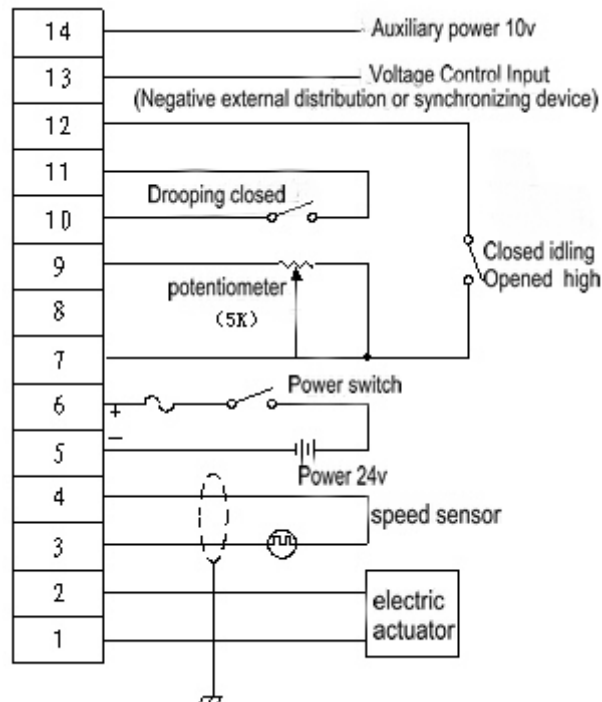


4 .System installation

4.1The system requirements of connecting cable



4.2 The requirements of port connection



4.3 Port connection specification

Port 1,2: Electric actuator

Port 3,4: Tachometric transducer/speed sensor

Port 5,6: Power(No.5 Pin for "+", No.6 Pin for "-")

Port 7,9: Remote control potentiometer(4.7K)

Port 10,11: Droop switch(Closed droop)

Port 7,12: High/low speed switch(Closed for idle speed))

Port 13: Voltage control input(Outside connected joint operating device)

Port 14: 10V auxiliary power

4.4 The requirements of connecting cable

Actuator cable: not less than 1.0 mm²copper wires.

Power wire: cross section should be not less than 1.3 mm²copper wires, VCC (Port 6) should connect with 15A fuse in series.

Sensor cable: cross section should be not less than 1 mm²shielded copper Wires.

4.5 Controller installation

Type DDE9800 speed control unit is usually installed in the control boxes of compressor unit, in order to prevent the controls from water, fog or coagulation. It should be avoided from high temperature or heat radiation.。

4.6 Sensor installation

The revolution speed transducer that electronic governor used is a magnetolectric tachometric transducer. The internal structure consists of magnetoconductivity probes, coils, magnetically steels. Revolution speed transducer

was installed on the flywheel shell ring gear of the engine. Distance the top of gear about 0.5mm. Usually we suggest screwing the top of gear of Revolution speed transducer, and exit 1/2-3/4 ring.

Notice:

The cables of tachometric transducer had better be not too long, and need to use the shielded cables. Otherwise, the attenuation and interference of signals maybe occurred. Tachometric transducer is an important sensing element of the electronic governor, it is only used for governor. It cannot

connect with other speed sensors at the same time.

4.7 Actuator installation

Please refer to the specification of actuators



5. Debugging

5.1 The speed adjustment of engine

With reference to the external wiring diagram, open the power switch after the connection. Put the high/low speed switch on the idle position (The engine without idle requirements can put it on the rated speed position). The speed had been set up when it left the factory. Customers need simple adjustment according to the speed requirements.

5.2 The adjustment of starting oil mass and acceleration time

When it starts, we can adjust the starting oil supply of actuator through the adjustment of starting oil mass potentiometer. In order to ensure the fully starting of engine with certain oil mass and reducing the smoke from starting the engine at the same time. "Acceleration time" potentiometer is to ensure that the adjustment of engine speed rate in the change of idle to rated speed when climbing. It will extend the acceleration time by clockwise, and it will reduce the acceleration time by counter-clockwise.

5.3 The stability adjustment of engine

First, adjusting the "gain" potentiometer and the "stability" potentiometer by clockwise until the speed of engine is not stable, then we should rotate the trimmer potentiometer by counter-clockwise until the engine is stable. Pay attention, the "gain" potentiometer can't put to the minimum position by counter clockwise, and the "stability" potentiometer can't put to the maximum position by clockwise. If the engine is still unstable, we can adjust the DIP



switch next to the rated speed potentiometer. The requirement of specific states as follow:

5.4The adjustment of steady timing ratio

When engines are paralleled, it is necessary to put the droop switch to the closed position, so as to make the characteristics of engine become soft, the speed of engine will decrease along with the increasing load. Adjusting the steady timing ratio potentiometer by clockwise, the steady timing ratio of engine will increase. Conversely, it will decrease. If the steady timing ratio needs more ranges, short-circuit port 7 and port 8, the steady timing ratio will arrive at 10% at this time. After finishing the adjustment, the desired speed of engine has a small change, it needs to reset the desired speed of engine.

5.5 Auxiliary input

Port 13 is a auxiliary input signal, the signals are imported from the automatic synchronization devices, load distribution devices and some other control systems. When the signals are imported, the speed of engine will decrease. it needs to reset the desired speed of engine. We can connect trimmer potentiometer (4.7K) between port 7 and port 9 without importing input signals. It is used for adjust the speed by hand.

5.6 Auxiliary output

Port 14 can provide the power supply (10V, 20mA) for other powers. But in the course of using, short-circuit will damage the controller.

6. The settlement and judgment of faults

Fault phenomena	Testing parts	Testing methods
The engine can't start	Power Indicator	The indicator lights don't light up, it shows that the engine is not wired up to the mains.
	Sensors	1. The installation of tachometric transducer isn't good, the gaps are large.
		2. The tachometric transducer was damaged or connection cables were occurred faults. The resistance of sensors should be 400-700 Ω . When it starts, whether the sensors input more than 3V effective signals or not.
	Actuators	1. The lineage parts of actuators and fuel pump racks had a jamming phenomenon.
		2. The actuator was damaged or connection cables were occurred faults. Measuring the coil resistance
The actuator can't open the oil valve completely	Battery voltage	Measuring the battery voltage when the actuator starts, if the battery is less than 75% of the rated operational voltage. Because of the under-voltage battery, it is necessary to charge batteries
	Actuators	The lineage parts of actuators and fuel pump racks had a jamming phenomenon.
The speed of engine is not stable	Controllers	1. Adjusting the stability and gain potentiometer of the controller
		2. Measuring the voltage between port 7 and port 14, it should be $10 \pm 0.5V$
The engine works for overspeed.	Controllers	The lineage parts of actuators and fuel pump racks had gaps or loose phenomenon
		1. Rated speed was set too high
		2. The gain was set too low, the sensitivity was poor. When the load was uninstalled suddenly, the speed would be too high
		3. Speed control unit was occurred faults
	Actuators	1. The lineage parts of actuators and fuel pump racks had a jamming or loose phenomenon
		2. The actuator doesn't match with zero position of oil pump. When the actuator was powered down, it still can't stop the oil supply.

	Tachometric transducers	The signals of tachometric transducers were occurred faults or connection cables were damaged.
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