

UQK-400

FLOAT LEVEL SWITCH

Operation Manual

UQK-400-DT-JS-1019-2018(A)



Preface

Thank you for choosing the products of Dandong Top Electronics Instrument (Group) Co., Ltd.

This operation manual provides you with important information on installation, connection and commissioning as well as on maintenance, troubleshooting and storage. Please read it carefully before installation and commissioning and keep it as part of the product near the meter for easy reading.

This manual can be downloaded by entering the version number at www.ddtop.com.

If the instructions are not followed, the protection provided by the meter may be destroyed.

Trademark, Copyright and Restriction Instructions

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The performance specifications of the meter are effective as of the date of publication and are subject to change without notice. Dandong Top Electronics Instrument (Group)Co.,Ltd. reserves the right to modify the products described in this manual at any time without prior notice.

Quality Assurance

Dandong Top Electronics Instrument (Group) Co.,Ltd. guarantees that all glass plate level gauge have no defects in materials and manufacturing processes within one year from the date of delivery.

During the warranty period, if the product returns with quality problems and the claim is determined by the manufacturer to be within the scope of warranty, Dandong Top Electronics Instrument (Group) Co.,Ltd. is responsible for repair or replacement of the buyer (or owner) free of charge.

Dandong Top Electronics Instrument (Group) Co.,Ltd. is not responsible for the costs caused by improper use of equipment, labor claims, direct or subsequent damage and installation and use of equipment. In addition to the special written warranty certificate for certain products of Dandong Top Electronics Instrument (Group) Co.,Ltd., Dandong Top Electronics Instrument (Group) Co.,Ltd. does not provide any express or implied warranty.

Quality

Dandong Top Electronics Instrument (Group) Co.,Ltd. has passed the ISO9001 quality system certification. The whole process of product production is strictly in accordance with the scope of the quality system, providing the strongest guarantee for product and service quality.

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1. Safety Tips

It is expressly prohibited to modify or change products for safety reasons, repair or replacement only allows the use of accessories specified by the manufacturer.

1.1 Explosion May Result In Death or Serious Injury.

When installing equipment in an explosive atmosphere, be sure to follow applicable local, national, international standards, codes, and procedures. Be sure to install the equipment in Intrinsically safe or non-flammable site operating procedures.

1.2 Process Leaks Can Cause Serious Injury or Death.

Care should be taken to lift the transmitter. If the process seal is damaged, the medium may leak at the joint.

1.3 Failure to Follow Safe Installation Guidelines May Result In Death or Serious Injury.

The operations described in this manual are performed by professionally trained and qualified professionals or end-user specialized professionals to complete.

2. Product Manual

2.1 Main Structure of Product -Figure 1

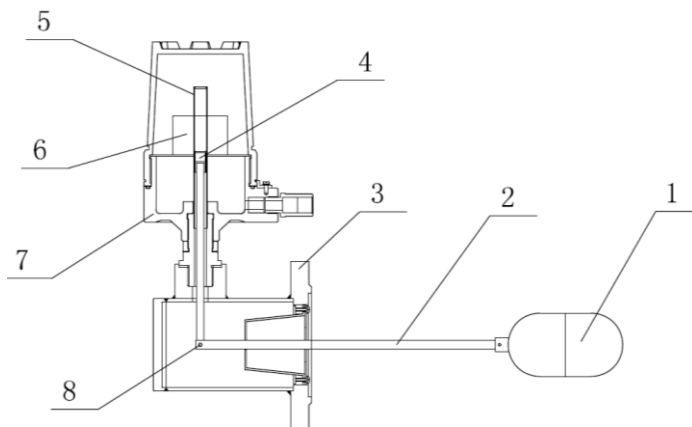


Figure1

1. Float, buoyancy measuring element
2. Connecting rod, swinging with the float
3. Flange

4. Magnetic rod, including magnetic steel
5. Isolation set
6. Magnetic switch assembly, micro switch and reed switch optional
7. Cage, 360° rotation
8. Hinge

2.2 Operating Principle –Figure2

The float is rigidly connected to the connecting rod, and the connecting rod and the magnetic rod are connected by a hinge. When there is no level or the level is not at the set alarm position, the floating ball drives the connecting rod to swing downward under the action of its own weight, so that the magnetic rod at the end of the connecting rod moves in the opposite direction and enters the magnetic field region of the magnetic switch assembly. By magnetic induction or by magnetic enthalpy, the magnetic switch or the bias magnet is attracted to make the switch contact open or close. When the level rises, the float drives the connecting rod to swing upward under the action of buoyancy, so that the magnetic rod at the end of the connecting rod moves downward in the opposite direction, the magnetic rod is separated from the magnetic field of the magnetic switch assembly, and the magnetic control switch returns to the original state or under the action of self-weight, the biased magnetic steel returns to a new equilibrium position, so that the switch contacts are turned on or off, and the level control and alarm are realized.

2.3 Packing

Please send the packaging waste to a special recycling agency.

2.4 Transporting

When hoisting and transporting, please select qualified hoisting equipment and lifting straps, and pay attention to safety.

2.5 Warehousing

Storage Temperature -20°C~40°C;Storage Humidity≤40%.

3. Technical Characteristics

3.1 Main Performance

3.1.1 Has Passed the National Explosion-Proof Certification, Certification Mark:

Intrinsically safe type Ex ia II CT5/T6 Ga

Explosion isolation type Ex d II CT1 ~ T5/T6 Gb

3.1.2 Product Performance Standards: Q/AMM003 Float Level Switch

3.2 Main Parameters

3.2.1 Power Supply Voltage: AC220V DC24V

3.2.2 Output Signal: Relay Contact SPDT or DPDT

4. Dimensional Schematic -Figure 2

If the order is required to be a special size, the actual size will prevail.

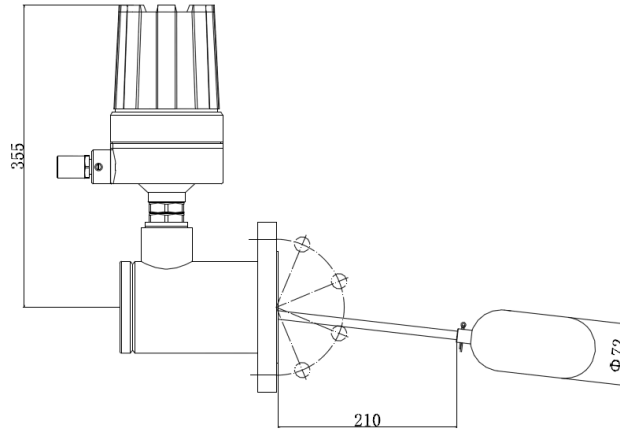


Figure 2

5. Unpacking and Inspection

5.1 Unpacking Inspection Notice

5.1.1 Check whether the product nameplate (Figure 4) is consistent with the supply list information.

	UQK-400 Float Level Switch		IP66
	Contact capacity AC220V 5A	Nominal diameter	Nominal pressure
Explosion mark Exia II CII~F/IBGa Exia II CII~F/IBGb	Ambient temperature -40℃~+80℃	Medium density g/cm ³	
	Tag No.	Factory date/No.	
Dandong Top Electronics Instrument (Group) Co., Ltd.			

Figure4 Sample Nameplate

5.1.2 对照装箱清单，检查各零件数量，材质是否正确。

5.1.2 Check the quantity of each part against the packing list and the material is correct.

5.2 Check Content

5.2.1 Check the appearance of the instrument for defects, damage and other abnormal conditions.

6 Installation

6.1 Installation Tool

6.1.1 Wrench, flange gasket and flange bolts for process connections.

6.1.2 Level

6.2 Installation Technical Requirements

6.2.1 Ensure that the lead length and inner diameter of the equipment are suitable for the selected float level controller to ensure that the float is in the tank.

6.2.2 Ensure that the horizontal level of the equipment is within 3 °.

6.2.3 Ensure that no ferromagnetic particles in the medium may be attracted to the controller's magnetic steel rod to affect the switching performance.

6.2.4 The liquid surface fluctuation frequency of the measured medium shall not be too large, and the fluctuation range shall not exceed the allowable action limit.

6.3 Installation Process

6.3.1 Place the gasket on the sealing surface of the container flange.

6.3.2 Carefully pick up the controller and load the float into the container.

6.3.3 Align the controller flange with the container flange, and install the head to ensure that the float swings up and down instead of swinging left and right.

6.3.4 Install flange bolts and nuts. Tighten the flange bolts alternately to ensure that the flange gaskets are installed correctly.

7. Debugging

7.1 Preparation for Commissioning

7.1.1 Debugging Tools: Multimeter

7.2 Electrical Wiring

7.2.1 Cable preparation: Wiring should be OD10mm five-core rubber sleeve flexible cable or rubber

cable, one core is internal grounding wire, and the other four cores are connected to a pair of normally open and normally closed contacts (using two of them) Core), or for two pairs of normally open, normally closed contact wiring.

7.2.2 Electrical wiring

1. Remove the cover
2. According to the wiring diagram wiring, please note that the high-level and low-reporting switches are reversed. Be sure to connect to the correct terminal according to the wiring diagram (see Figure 4). For the SPDT form, the high-order report is connected to a pair of normally closed points - the common end, and the low-end is connected to a pair of normally open points - the common end; for the DTDP form, the high report is connected to two pairs of normally closed points - the common end, and the low report is connected to the two pairs. Opening point - public end.

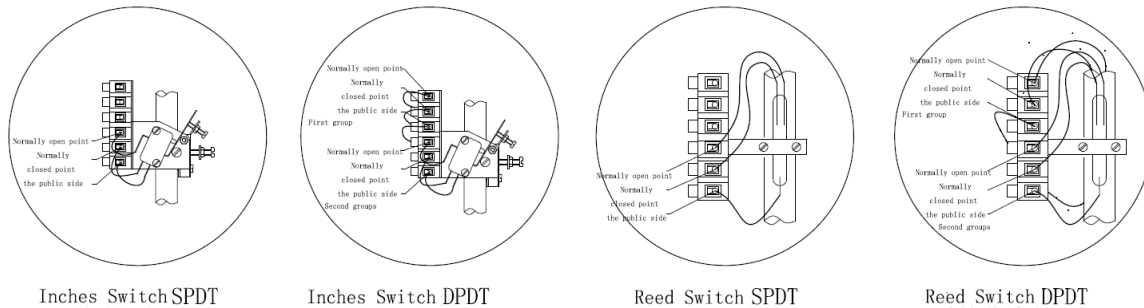


Figure 4 Electrical Wiring

※ **The normally open and normally closed points in the wiring diagram refer to the original state of the micro switch or reed switch.**

3. All terminals should be in good contact, the output nut should be properly pressed to prevent the lead from loosening.
4. Ensure that excess wires do not interfere with the movement of the switch cover or switch mechanism.

7.3 Debugging Operation Process

7.3.1 Before installation, connect the multimeter to the terminal that needs wiring. Simulate the level lift and raise or lower the float by hand to verify that the output status is correct.

7.3.2 After installation, connect the multimeter to the terminal that needs wiring. When the level reaches the alarm position, check whether the level output is correct.

8 Precautions

8.1 The density of use should be the same as the design density. If the density changes, please inform the factory;

8.2 Make sure the power supply is safe and reliable, and must be powered off before opening the cover.

8.3 When the vibration is large, it is not suitable to use the float level controller.

8.4 Medium with viscosity $\geq 500\text{mPa/s}$ is not suitable for use with float level controller.

8.5 Medium with ferromagnetic particles is not suitable for use with float level controller.

8.6 After wiring, tighten the power supply cover to prevent the instrument from getting wet.

9 Fault Analysis and Elimination

Fault Phenomenon	Cause of Issue	Troubleshooting Method
The level to the specified position switch does not work.	<ol style="list-style-type: none"> 1. The ball is too heavy to float. 2. Float ball, leak, and medium. 3. The installation location is wrong. 4. The lead pipe is too long, the float is stuck in the lead pipe and does not reach into the tank. 5. Ferromagnetic particles or obstacles in the medium cause the float ball to block. 6. Magnetic switch assembly failure. 	<ol style="list-style-type: none"> 1. Confirm the density or replace the float. 2. Replace the float. 3. Confirm the installation position according to the instructions to ensure that the head is flushed. 4. Confirm that the order neck is larger than the length of the guide tube. If the neck is small, contact the factory to replace the relevant parts. 5. Remove the instrument to clean the float ball and magnetic rod. 6. Replace the switch assembly.

10. Disassembly

10.1 Warning

Attention should be paid to hazardous process conditions, such as pressure inside the vessel, high temperatures, corrosive or toxic medium, etc.

Refer to the instructions in section 6.3 Installation Operation and Section 7.2 Electrical Wiring to remove the parts in the reverse order of operation.

10.2 Waste Removal

Waste disposal should be carried out in accordance with the current guidelines in each region.

11 Product Certification

Product Certification		
Certification	Certificate No.	Scope of certification/description
Explosion proof certificate 	Ex ia	CCRI16.2074X
	Ex d	CCRI16.1183X
		Ex ia IIC T1~T5/T6 Ga
		Ex d IIC T1~T5/T6 Gb