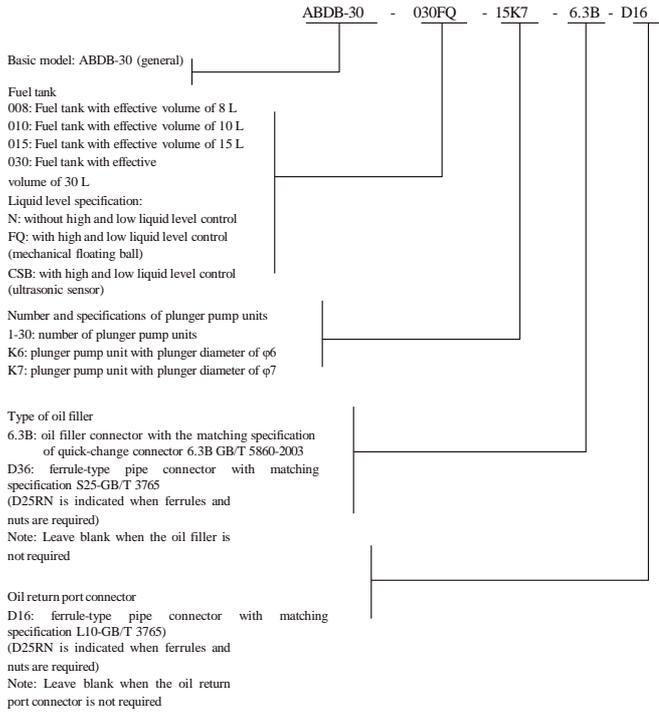


## Description

### Model Description

The ABDB-30 multi-point pump will be defined according to the model coding rules on the nameplate.

For example:



## Working Principle

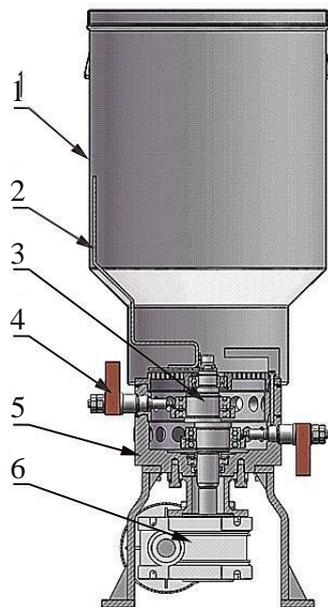


Fig. 2 Section view of ABDB-30 multi-point pump

### Composition of ABDB-30 Multi-Point pump:

- 1- Fuel tank 2- Stirrer assembly 3- Crankshaft assembly 4- Plunger pump unit 5- Mounting seat of plunger pump 6- Reducer motor

### Working Principle:

When the multi-point pump is running, it is not allowed to remove the protective devices of moving parts (such as motor fan shield, oil drum cover, etc.).

When hazardous substances (lubricating grease/oil) leak, improper treatment will cause harm to people and the environment, and the treatment methods and processes must meet the requirements of relevant laws.

Non-compliance with specifications will cause electric shock.

## Overview

This manual is only applicable to the installation, operation and maintenance of ABDB-30 multi-point pump.

## Application of ABDB-30 Multi-point Pump

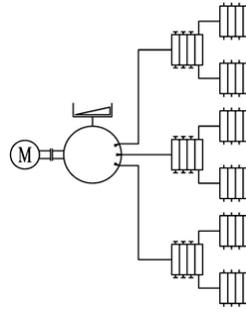


Fig. 1-1 Application Example of ABDB-30 Multi-point Pump

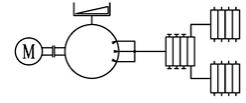


Fig. 1-2 Application Example of ABDB-30 Multi-point Pump

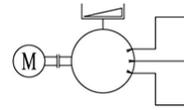


Fig. 1-3 Application Example of ABDB-30 Multi-point Pump

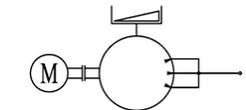


Fig. 1-4 Application Example of ABDB-30 Multi-point Pump

ABDB-30 multi-point pump serves as centralized lubrication pump in large-scale progressive lubrication system (see Fig. 1-1 and Fig. 1-2)

As a multi-point pump, ABDB-30 multi-point pump directly supplies lubricating grease or lubricating oil to each lubricating point (see Fig. 1-3 and Fig. 1-4)

In the large-scale progressive lubrication system, ABDB-30 multi-point pump can be connected with a set of progressive lubrication system with one plunger pump unit (see Fig. 1-1), or multiple plunger pump units can be combined and connected with a set of progressive lubrication system according to the requirements of lubricating grease demand (see Fig. 1-2);

In the application cases of multi-point pump, ABDB-30 multi-point pump can be directly connected with lubricating points by each plunger pump unit (see Fig. 1-3), or can be connected with lubricating points by combining multiple plunger pump units (see Fig. 1-4).

## Working Principle of Liquid Level Signal

### FQ liquid level

Switching signal is adopted in the floating ball type liquid level.

When lubricating grease/oil in the fuel tank is at a low level, the floating ball (article 5) will follow up to the low level, and the dry reed pipe (article 3) at the low level will be closed under the action of the magnet inside the floating ball, and the low level signal will be output. When the lubricating grease/oil in the fuel tank reaches a high level, the floating ball (article 5) follows up to the high level, and the dry reed pipe (article 3) at the high level is closed under the action of the magnet inside the floating ball, outputting a high level signal.

The floating ball type liquid level switch is flexible and reliable in detection, and other pre-alarm liquid level points can be customized according to customer requirements.

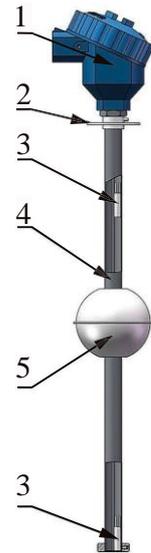


Fig. 3 Structure Diagram of FQ Liquid Level Switch

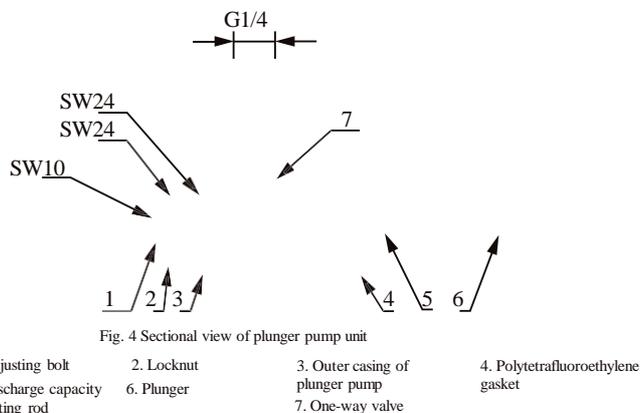
### CSB: With High and Low Liquid Level Control (Ultrasonic Sensor)

Ultrasonic level meter sends out high-frequency ultrasonic pulse through transducer (probe), which is reflected by the surface of measured grease, and part of reflected echo is received by the same transducer and converted into electrical signal. The real-time liquid level is calculated by the built-in controller and compared with the set high and low liquid level values. According to the comparison result, the corresponding relay is driven to turn on and off to indicate the liquid level.

## Technical Parameters of ABDB-30 Multi-point Pump

No.	Item	Parameters	Remarks
1	Number of plunger pump unit	1-30 pcs	
2	Specification of screw thread of plunger pump unit mounting hole	M22*1.5	
3	Specification of screw thread of oil outlet	G1/4	The screw thread orifice is flat seal
4	Maximum working pressure	35 MPa	
5	Applicable grease	NLGI 0#, 1#, 2#	Corresponding low-temperature grease must be used in the low-temperature environment
		Lubricating oil with viscosity above 200mm <sup>2</sup> /s	
6	Plunger oil output	0.033ml/cy~0.16ml/cy	K6 plunger pump unit
		0.045ml/cy~0.23ml/cy	K7 plunger pump unit
7	Capacity of fuel tank	8, 10, 15, 30 (L)	High liquid level control can be selected according to demand
8	Rated input voltage	AC380V	Three-phase three-wire wiring
9	Rated current	0.97A	
10	Rotating speed of stirrer	15.4r/min (±10%)	
11	Noise	Not more than 55 dB	
12	Weight of pump	About 45 Kg	Without plunger pump unit and mounting hole Plug
13	Weight of plunger pump unit	0.57Kg	There is basically no difference between K6 plunger pump unit and K7 plunger pump unit

### Discharge Capacity Adjustment



#### Steps of discharge capacity adjustment:

1. Use SW24 wrench to loosen the locknut (article 2) and keep the plunger pump outer casing (article 3) still.
  2. Use SW10 wrench to rotate the adjusting bolt (article 1). When it is rotated clockwise, the discharge capacity decreases, and when it is rotated counterclockwise, the discharge capacity increases.
  3. After adjustment, tighten the locknut (article 2) with a tightening torque of about 12 Nm.
- \* The discharge capacity of the plunger pump unit is set to the maximum position by default at the time of delivery. The discharge capacity changes by 0.042 mL for every rotation of the K6 plunger pump unit, and by 0.057 mL for every rotation of the K7 plunger pump unit.

## Maintenance and Repair

When the multi-point pump is under maintenance or repair, the power supply must be disconnected first. After shutdown, disconnect the oil outlet of plunger pump unit to decrease the pressure in multi-point pump and pipeline system; When parts need to be replaced, the original parts must be used; The plunger pump unit will wear naturally after working for a period<sup>①</sup>, so it needs to be replaced.

## Installation

### Environmental Requirements for Installation of ABDB-30 Multi-point Pump

- On-site dust prevention, do not install it in the space with flying dust (fuel tank of multi-point pump is not dust-proof);
- There shall be no moving parts around the multi-point pump to prevent damage to it; Ensure that there is sufficient reserved space around the multi-point pump for operation (lubricating grease filling, maintenance, etc.);
- The bottom surface shall be flat without vibration;
- If the multi-point pump is applied outdoors, in order to effectively prolong the service life of the equipment, a sunshade shall be set up on the multi-point pump to avoid direct sunlight and rain, and lightning protection measures shall also be taken.

### Electrical Wiring

AC 380V three-phase three-wire system is adopted in the drive motor of multi-point pump. After wiring, ensure that the rotation direction of the stirrer assembly is clockwise (observed from the upper part of the fuel tank). To protect the multi-point pump and the whole circuit system, the wiring of the drive motor needs to be provided with fuses (the fuse parameters are selected according to the motor parameters).

Refer to the wiring terminal diagram in the parameter section of the liquid level switch in the manual for the liquid level control wiring. All electrical work must be carried out by professional electricians.

### Commissioning

Before starting the ABDB-30 multi-point pump, fill lubricating grease/oil into the fuel tank through the barrel cover or fueling connection; There are two specifications for the fueling connection. Refer to the model description for details. \* For multi-point pumps with FQ liquid level, it is not recommended to open the barrel cover to fill lubricating grease, and try to fill it through the fueling connection.

### Note:

1. Pay attention to prevent dust or foreign matters from entering the fuel tank during filling the lubricating grease into it.
2. Before commissioning, fill lubricating grease into the fuel tank in time to avoid long-time idling of multi-point pump.
3. The surrounding environment of the multi-point pump shall be kept clean, and the lubricating grease/oil filling process shall not contaminate the surrounding environment.
4. When the multi-point pump runs for the first time, open the oil outlet of the plunger pump unit, and connect to the system after normal oil outlet.
5. When the multi-point pump is running, it is not allowed to contact any part in the fuel tank to prevent damage to the multi-point pump or injury by the stirrer.
6. All system components connected after multi-point pump (such as progressive distributor, pipeline and connector) must meet the maximum system pressure requirements.
7. Each plunger pump unit must be connected with an overflow valve (the opening pressure shall not exceed 35 MPa) to protect the system.

### Putting into Operation

1. Disconnect all oil outlets of each plunger pump unit of multi-point pump.
  2. Start the multi-point pump.
  3. After the lubricating grease is discharged from all the oil outlets of each plunger pump unit, adjust the plunger pump unit to the required discharge capacity (the discharge capacity of the plunger pump unit is the maximum by default when leaving the factory), and close the multi-point pump.
  4. Connect the pipeline pre-filled with lubricating grease to the oil outlet of the plunger pump unit, and the system runs normally.
- \* Due to different types of lubricating grease and various environment temperatures on site, the oil discharge time of the plunger pump unit will vary greatly during the first startup.
- \* The discharge capacity of the plunger pump unit of ABDB-30 multi-point pump can be adjusted during the running process (refer to discharge capacity adjustment for adjusting method).

### Replacement of Plunger Pump Unit

#### Preparation:

1. Turn off the multi-point pump and clean the outside.
  2. If there is lubricating grease in the multi-point pump fuel tank and the lubricating grease is relatively sticky and unable to flow out through the mounting hole of the plunger pump unit, it is not necessary to clean the lubricating grease in the fuel tank, otherwise it is necessary to discharge the lubricating grease/oil in the fuel tank.
  3. Stop the stirrer assembly on the side of the plunger pump unit to be replaced.
- Note: For the grinding process used for the plunger in the plunger pump unit and the inner casing of the plunger pump, the fit clearance is only 0.003-0.007 mm, therefore, the plungers of different plunger pump units shall not be interchanged.

#### Disassembly of Plunger Pump Unit

1. Remove the pipeline connected to the oil outlet of the plunger pump unit.
2. Use SW24 wrench to clamp the wrench position of the head of the plunger pump unit (as shown in Fig. 4) and then unscrew the plunger pump unit.
3. After the plunger pump unit is completely disengaged from the mounting hole thread, lift plunger end of the plunger pump unit slightly upwards, and then gently take out the plunger pump unit together with the plunger. Pay attention to prevent the plunger from staying inside the pump body during the taking out.
4. After the plunger pump unit is taken out, reinstall a new plunger pump unit or plug as required.

#### Installation Steps of Plunger Pump Unit

1. Remove the old plunger pump unit or plug, and push aside the lubricating grease inside the multi-point pump to observe the bearing and plunger pull ring on the crankshaft assembly, and confirm that the space between the bearing on the crankshaft assembly and the plane of the mounting hole is about 51.5 mm (the stirrer assembly stops at one side of the mounting hole of this plunger pump unit).

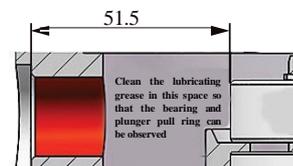


Fig. 5-1

2. Pull out the plunger in the new plunger pump unit by about 28 mm.

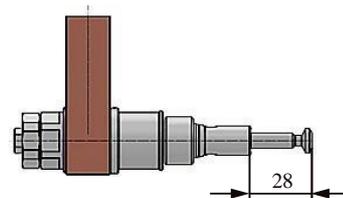


Fig. 5-2

3. Tilt the plunger pump unit upward as shown in the figure and install it into the corresponding mounting threaded hole.

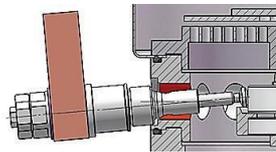


Fig. 5-3

4. Place the plunger pump unit in a horizontal position, and ensure that the plunger head has fallen into the groove between the plunger pull ring and the bearing, and then tighten the plunger pump unit with an open-end wrench of SW24 with the tightening torque of 30-35 Nm.

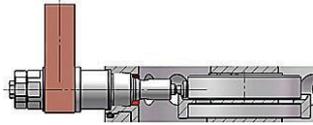


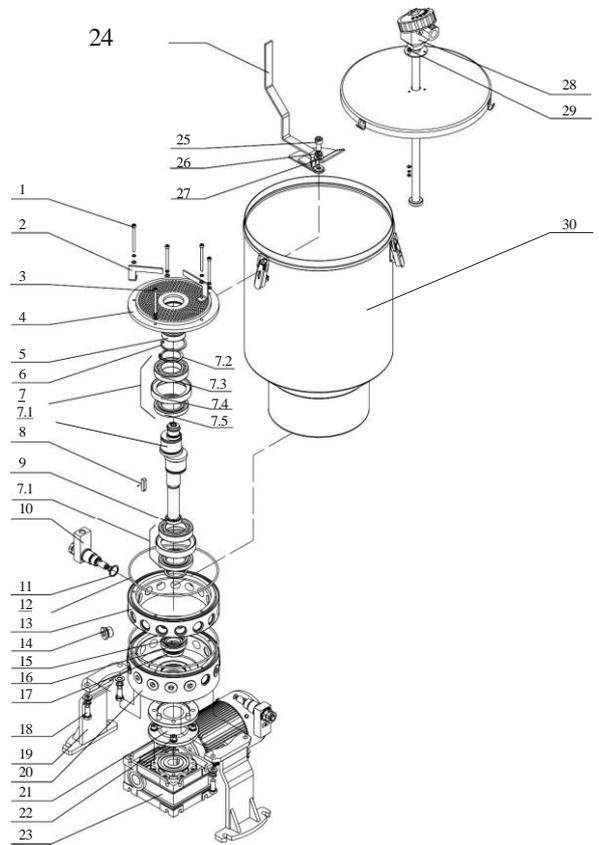
Fig. 5-4

**Note: If the plunger pump unit is installed incorrectly, the plunger pump unit cannot discharge lubricating grease/oil normally, and may even damage the multi-point pump.**

### Fault Diagnosis

Fault Phenomenon	Fault Analysis	Solutions
All plunger pump units cannot discharge lubricating grease/oil	Insufficient lubricating grease/oil in the multi-point pump oil tank	Fill lubricating grease/oil into the multi-point pump oil tank, then open the oil outlet of the plunger pump unit, and wait until the oil outlet is reconnected to the pipeline
A plunger pump unit in the multi-point pump cannot discharge lubricating grease/oil	The oil inlet of the plunger pump unit is blocked	Remove the plunger pump unit, and check whether there is any foreign matter at the oil inlet of the plunger pump unit. If there is, clean it up before installing it
	The one-way valve of the plunger pump unit is faulty	Replace the AUTOL original one-way valve
	The plunger of the plunger pump unit is damaged or badly worn	Replace it with a new plunger pump unit
There are bubbles in the lubricating grease output by one or several plunger pump units of the multi-point pump	A large number of bubbles are mixed when lubricating grease is added	Open the pipe connector at the oil outlet of the plunger pump unit, and start the multi-point pump until no bubbles of lubricating grease flow out, and then reset the pipeline.

### Components of ABDB-30 Multi-point Pump



### Component Parts List

	Material Code	Material Name	Material Drawing No./Standard No.	Quantity
1	3040104000	Screw M*65	GB/T 70.1-2005	2
2	3010104490	Oil scraper	ABDB30-08	2
3	3040103150	Screw M5*60	GB/T 70.1-2000	3
4	2013030210	Oil distribution disc	ABDB30-01	1
5	3049000970	Deep groove ball bearing 6205	GB/T 276-1994	1
6	3040104010	Circlip for hole 52	GB/T 893.1-1986	1
7	/	Crankshaft assembly	ABDB30.07.00	1
7.1	2013030180	Crankshaft	ABDB30-04	1
7.2	3049000940	Deep groove ball bearing 6009	GB/T 276-1994	2
7.3	2013030190	Plunger pull ring	ABDB30-05	2
7.4	3049000950	Deep groove ball bearing 16009	GB/T 276-1994	2
7.5	3040100990	Circlip for shaft	GB/T 894.2-1986	2
8	3049000960	Key A8*32	GB/T 1096	1
9	2013030170	Retainer ring	ABDB30-07	1
10		Plunger pump unit		1~30
	2013020030	K7 plunger pump unit	ABDB30.03.00	
	2013020040	K6 plunger pump unit	ABDB30.04.00	
11	5050000314	Polytetrafluoroethylene gasket	ABDB30-10	1~30
12	3040201490	O-ring 190*3.5	GB/T 3452.1-2005	2
13	2013030200	Upper mounting seat of plunger pump	ABDB30-02	1
14	3050102550	Hexagonal socket head plug M22*1.5	YFIC-068	29
15	3040103410	Circlip for hole 55	GB/T 893.1-1986	1
16	3049000930	Deep groove ball bearing 16006	GB/T 276-1994	1
17	3040201480	Rotating shaft seal	AE1679A0	1
18	3040101240	Bolt M10*25	GB/T 5783-2016	8
19	3010104510	Pump support leg	ABDB30.06.00	2
20	22013030160	Lower mounting seat of plunger pump	ABDB30-03	1
21	3010104470	Connecting flange	ABDB30-06	1
22	3040103700	Hexagon socket head cap screw M8*20-A2-70	GB/T 70.1-2008	4
23	3010404040	Reducer motor	ABDB30.08.00	1
24	3010104500	30L stirrer assembly	ABDB30.02.00	1
25	3040104020	Screw M10*20	GB/T 70.1-2000	1
26	5000000008	Standard spring washer 10	GB/T 93-1987	9
27	3040100620	Flat washer 10	GB/T 97.1-2002	9
28	2013020050	Float liquid level switch	ABDB30.05.00	1
29	3040101750	Screw M4*12	GB/T 70.1-2005	3
30	3010104480	30L oil drum	ABDB30.01.00	1

### Outside View

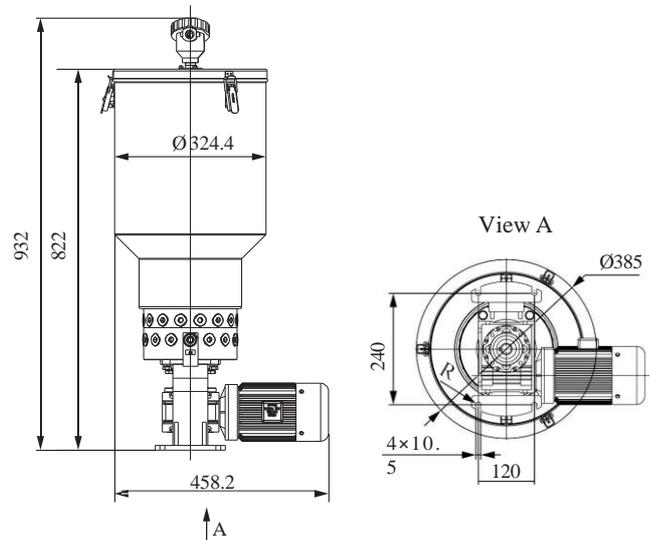


Fig. 7

## Parameters of liquid level switch

### FQ parameters: with high and low level control (mechanical floating ball)

The floating ball type liquid level switch is of the structure of floating ball + dry reed pipe, and the position and quantity of the dry reed pipe can be adjusted according to the customer's requirements. For example, the customer can set three signal points, namely high level point, 1 # low level point and 2 # low level point; The attached drawing is the wiring diagram of two level signal points.

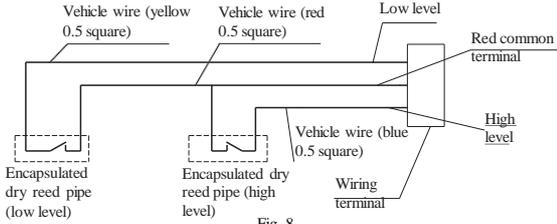


Fig. 8

### Technical Parameters:

Item	Technical Parameters
Maximum power	10W
Maximum switching voltage	DC100V
Minimum breakdown voltage	DC220V
Maximum switching current	0.5A
Maximum contact resistance	100mΩ

### CSB parameters: with high and low level control (ultrasonic sensor)

Ultrasonic level sensor is a non-contact sensor that uses echo delay time method for distance sensing, with the operating voltage of DC 24V. It has strong anti-interference ability, can set up upper and lower limit nodes at will and adjust online output, and has the on-site display.

### CSB ultrasonic sensor has a variety of output signals to choose from:

- 3-way limit NPN open collector electrode control output setting for material level and liquid level control.
- 2-way relay control output setting for material level and liquid level control.
- 4~20 mA current output, RS 485 serial data output or 0~5 V voltage and other analog outputs are optional.
- Select PC serial port output and conversion accessories, which can be directly connected with PC unit network.

**Note: If there is no special requirement, our default is 2-circuit relay control output.** If other signals need to be output, they should be brought out when ordering.

## Installation of CSB Ultrasonic Sensor

When leaving the factory, Our company has already installed it. If you need to disassemble and replace it, you need to contact us for after-sales. It is forbidden to disassemble and replace it by yourself.

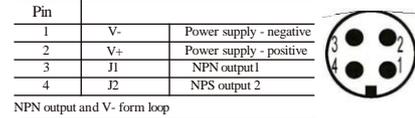
### Technical Parameters:

Item	Technical Parameters
Range	1m
Blind area	<0.06m
Error	± 1 mm
Display	Four-bit eight-segment 0.36-inch LED
Minimum display resolution	1mm
Keyboard	Three-position patch key
Operating frequency	20~350KHz (varies with model specifications)
Optional power supply mode	12-24VDC
Power consumption	<1.5W
Output mode (ordering and purchasing)	4~20mA RL>600Ω (standard)
	1~5V/1~10V
	RS485 (optional Bluetooth conversion accessory)
Instrument material	3-way NPN (configurable as PP pulse output)
	ABS engineering plastic Probe: 304 stainless steel
Installation method	M30×1.5"
Overall dimensions	Φ75mm×94mm×M30
Incoming cable	0.8m (optional length)
Working environment	Normal temperature and pressure
Protection level	Ip65 (higher protection level can be customized)
Explosion-proof grade	Exia IIBT4Gb (ordering and purchasing)

### Wiring Description of CSB Ultrasonic Sensor

Since the output signals are different, the wiring forms are different. Our company will provide a manual of ultrasonic level sensor with the equipment when leaving the factory. Users can refer to the manual for wiring according to the chosen output signals.

The following figure shows the definition of NPN pin



NPN output and V- form loop

Fig. 9

