PROFEC

## Important tips

Before installing, please read this manual carefully. This manual is mainly aimed at the trained professional staff. Therefore, it does not include the basic installation steps. If there is any change in the product model and appearance, please refer to the actual product. This specification applies equally to the case without affecting the function of the product. For details of the change, please contact the company.

- This product is a precision measuring instrument , strict test before leaving factory, please operate by professional personnel;
- If the product does not operate normally or in need of repair, please contact our company or through our authorized dealers;
- This product is a precision measuring instrument, not be dropped or hit it;
- Please do not change any of the length of the cable, otherwise it will affect the performance of the product.

## Introduction

- The low starting flow, minimum flow rate is lower than the 1/3 of the traditional water meter;
- Bi-directional flow measurement;
- The water temperature detection, temperature alarm;
- No moving parts, no wear, can be long-term and stable operation;
- The power supply of water meter is ensured by a 3.6V replaceable lithium battery ;
- Alarm for abnormal water use;
- Be installed at any angle, the measurement accuracy is not affected, no air measuring;
- Ultrasonic signal quality detection;
- Magnetic induction button;
- The overall IP68 design, long-term immersion in the work;
- To support M-Bus, RS485, Infrared, Wireless communication interface etc;
- Be compatible with EN13757and Modbus RTU communication protocol;
- The water meter is required in accordance with drinking water standards;
- LCD screen can be changed by touching the magnetic switch;
- Pressure sensor is optional. This product can be built-in pressure sensor, used to monitor pipe pressure.

## Groundbreaking Performance

| Precision Class | | Class 2 |
|---|---|---|
| Range ratio (Q3：Q1) | Class 2 | 400:1(250:1,500:1,800:1 optional) |
| Maximum flow reading ($m^3$) | DN50-DN100 | 9999999.99999 |
| | DN125-DN600 | 99999999.99999 |
| Maximum working pressure | | DN50-DN150 1.0MPa，1.6MPa（2.6MPa optional） |
| | | DN200-DN600 1.0MPa（1.6MPa、2.5Mpa optional） |
| Temperature grade | | T30（T50 optional） |
| Upstream flow field sensitivity level | | DN50-DN80：U5 |
| | | DN100-DN600：U0 |
| Downstream flow field sensitivity level | | DN50-DN80：D3 |
| | | DN100-DN600：D0 |
| Environmental Protection | | IP68(IP65 when the dual power supply is supplied) |
| Power Source | | 3.6V Li-battery(24VDC optional) |
| Battery life | | See panel |
| Ambient operation temp | | See panel |
| Electromagnetic environment level | | Class E2 ( class E1 optional ) |
| Installation method | | Arbitrary angle |
| * remark | | Battery must be in normal ambient temperature conditions also depends on the data transmission frequency and correct meter battery installation (positive electrode on the top) |

## Outputs

| Standard interface | Infrared、M-Bus、RS485 |
|---|---|
| Analog Output | 4~20mA:The Analog Output shows the currently measured flow rate |
| Wireless interface | wM-Bus: T1 868MHz |
| | LoRa:470MHz |
| | NB-IoT |
| Digital (pulse) Output | OD:Volume |

# Flow Performance Data (Customizable)

- **Class 2(400:1)**

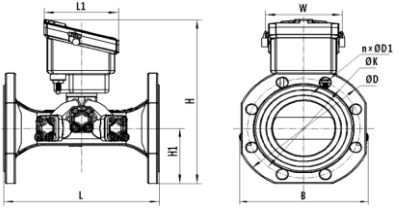
| Nominal diameter DN(mm) | 50 | 65 | 80 | 100 | 125 | 150 |
|---|---|---|---|---|---|---|
| Overload flow rate Q4 ($m^3/h$) | 31.25 | 50 | 78.75 | 125 | 200 | 312.5 |
| Permanent flow rate Q3 ($m^3/h$) | 25 | 40 | 63 | 100 | 160 | 250 |
| Transitional flow rate Q2 ($m^3/h$) | 0.1 | 0.16 | 0.252 | 0.4 | 0.64 | 1 |
| Minimum flow rate Q1 ($m^3/h$) | 0.0625 | 0.1 | 0.1575 | 0.25 | 0.4 | 0.625 |
| Pressure loss grade | 25 | 25 | 25 | 25 | 25 | 25 |

| Nominal diameter DN(mm) | 200 | 250 | 300 | 350 | 400 | 500 |
|---|---|---|---|---|---|---|
| Maximum flow Q4 ($m^3/h$) | 500 | 787.5 | 1250 | 2000 | 2000 | 3125 |
| Common flow Q3 ($m^3/h$) | 400 | 630 | 1000 | 1600 | 1600 | 2500 |
| Boundary flux Q2 ($m^3/h$) | 1.6 | 2.52 | 4 | 6.4 | 6.4 | 10 |
| Minimum flow Q1 ($m^3/h$) | 1 | 1.575 | 2.5 | 4 | 4 | 6.25 |
| Pressure loss grade | 25 | 25 | 25 | 10 | 10 | 10 |

| Nominal diameter DN(mm) | 600 | | | | | |
|---|---|---|---|---|---|---|
| Maximum flow Q4 ($m^3/h$) | 5000 | | | | | |
| Common flow Q3 ($m^3/h$) | 4000 | | | | | |
| Boundary flux Q2 ($m^3/h$) | 16 | | | | | |
| Minimum flow Q1 ($m^3/h$) | 10 | | | | | |
| Pressure loss grade | 10 | | | | | |

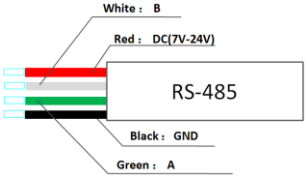
## Dimension

| pressure grade | DN (mm) | Outline size (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | L1 | H | H1 | W | B | ΦD | ΦK | n×ΦD1 |
| PN10 /PN16 | 50 | 200 | 120 | 240 | 65 | 123 | 155 | 165 | 125 | 4×Φ18 |
| | 65 | 200 | 120 | 255 | 70 | 123 | 170 | 185 | 145 | 4×Φ18 |
| | 80 | 225 | 120 | 280 | 90 | 123 | 185 | 200 | 160 | 8×Φ18 |
| | 100 | 250 | 120 | 300 | 100 | 123 | 205 | 220 | 180 | 8×Φ18 |
| | 125 | 250 | 120 | 380 | 125 | 123 | 250 | 250 | 210 | 8×Φ18 |
| | 150 | 300 | 120 | 325 | 130 | 123 | 260 | 285 | 240 | 8×Φ22 |
| PN10 | 200 | 350 | 120 | 470 | 170 | 123 | 350 | 340 | 295 | 8×Φ22 |
| | 250 | 450 | 120 | 525 | 198 | 123 | 450 | 395 | 350 | 12×Φ22 |
| | 300 | 500 | 120 | 575 | 223 | 123 | 500 | 445 | 400 | 12×Φ22 |
| | 350 | 500 | 120 | 635 | 253 | 123 | 500 | 505 | 460 | 16×Φ22 |
| | 400 | 600 | 120 | 690 | 283 | 123 | 600 | 565 | 515 | 16×Φ26 |
| | 450 | 600 | 120 | 750 | 335 | 123 | 600 | 615 | 565 | 20×Φ26 |
| | 500 | 600 | 120 | 790 | 335 | 123 | 600 | 670 | 620 | 20×Φ26 |
| | 600 | 800 | 120 | 895 | 390 | 123 | 800 | 780 | 725 | 20×Φ30 |
| PN16 | 200 | 350 | 120 | 470 | 170 | 123 | 350 | 340 | 295 | 12×Φ22 |
| | 250 | 450 | 120 | 530 | 203 | 123 | 450 | 405 | 355 | 12×Φ26 |
| | 300 | 500 | 120 | 580 | 230 | 123 | 500 | 460 | 410 | 12×Φ26 |
| | 350 | 500 | 120 | 640 | 260 | 123 | 500 | 520 | 470 | 16×Φ26 |
| | 400 | 600 | 120 | 695 | 290 | 123 | 600 | 580 | 525 | 16×Φ30 |
| | 450 | 600 | 120 | 737 | 358 | 123 | 600 | 640 | 585 | 20×Φ30 |
| | 500 | 600 | 120 | 815 | 358 | 123 | 600 | 715 | 650 | 20×Φ33 |
| | 600 | 800 | 120 | 925 | 420 | 123 | 800 | 840 | 770 | 20×Φ36 |

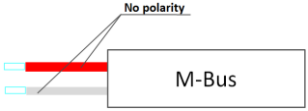


## Communication interface connecting illustration

### Terminal diagram(RS-485)




### Terminal diagram(M-Bus)




## Installation and connection requirements

### Install Important Tips

- Pay attention to the seal to prevent leakage;
- To pay attention to the instrument's direction must be consistent with the actual flow direction;
- Note not let the gasket protruding into the pipe after the installation;
- The instrument is installed in the open pipe valve, pay particular attention not to form a negative pressure in the pipeline gauge installation site, so as to avoid damage to the instrument;
- The flange surface must clean up, and ensure no sealing effects of the damage;
- the flange connection hole of the related parts is connected to lined up properly;
- The seal shall not be damaged before and after the installation, when installing, ensure that the center and the center of the pipeline lined up properly.

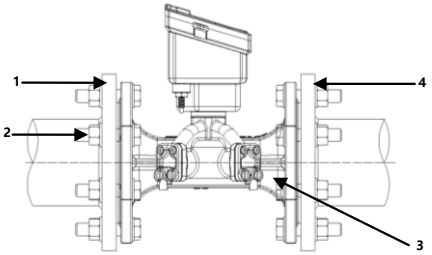
## installation and connection requirements

- When install water meter in horizontal position, do not install in the highest position, avoid bubble gathers;
  Straight pipe requirement in horizontal position: R≤800 upstream 10 and downstream 5;
  R≤500 upstream 3 and downstream 0;
- When install water meter in vertical position, water should flow from bottom to up.
  Straight pipe requirement in vertical position: R≤800 upstream 10 and downstream 5;
  R≤500 upstream 10 and downstream 5.
- All the water meter ex-factory will undergo strict inspection, maintenance, replacement of parts; calibration and maintenance are required by qualified personnel to carry out, if you need more technical support, please contact us;
- To be in strict accordance with the professional design installation, it is strictly prohibited to move;
- In order to ensure the accuracy of the instrument, signal cable length do not change;
- The water seal can not be damaged, otherwise no warranty;
- before the installation of instrument, it must ensure the circulation line has been cleaned to prevent stones and other debris in the pipeline;
- The water meter before and after the pipe recommended to install valves, to facilitate future maintenance;
- The replacement of the battery must be operated by professional personnel.

## Instrument installation position

To install upward in the liquid (or oblique) vertical pipe flow, followed by the horizontal line, try to avoid the liquid down (or oblique) flow pipe, to prevent liquid dissatisfaction pipe.

## Installation steps




**1 upper end flange 2 bolt connection assembly 3 water meter body 4 downstream end flange**

- Each place a seal on The upper and lower flanges in the pipeline;
- According to the flow direction of flow meter and pipe, install the water meter on the pipe;
- through a bolt of The connecting component, connect The water meter body flange and pipe flange. Adjust the position of the seal to ensure that the sealing gasket is aligned with the flange. Tighten the bolt assembly, install the pipe body and firm.

## Description of the state of the content of hazardous substances in products

| Component name | Toxic or hazardous substances or elements | | | | |
|---|---|---|---|---|---|
| | Lead Pb | Mercury Hg | Cadmium Cd | Six valence chromium Cr (VI) | Multi bromine PBB |
| complete machine | × | ○ | ○ | ○ | ○ |
| Component name | Two phenyl ether PBDEs | Diisobutyl phthalate DIBP | Phthalate DEHP | Dibutyl phthalate DBP | Benzyl phthalate BBP |
| complete machine | ○ | ○ | ○ | ○ | ○ |

○: It indicates that the content of the toxic and hazardous substances in all homogeneous materials of this part shall not exceed the limits set by the DIRECTIVE 2011/65/EU standard.

×: It indicates that the content of the toxic and hazardous substances in a homogeneous material in at least one part of the component exceeds the requirements specified in the DIRECTIVE 2011/65/EU standard.

Note:

1.This table shows that our products don't contain these substances.

2.The explanatory power of part definition in this table belongs to our company.

3. According to the EU waste electrical and electronic recycling directive 2002/96/EC (WEEE),if you need to scrap the product, you can return to my company, by my company to do scrap processing, but also can be returned to the company to have the quality of recycling. Not allowed to be discarded with other living garbage.

## Warranty commitment

(1) Free warranty: since the day you buy (in a formal purchase invoice date), to ensure that the seal is intact, the product quality problems as a result of the fault or not normal, the company responsible for the repair or replacement free of charge, but do not bear the cost of door-to-door service.

(2) Exempt from warranty obligations: in order to protect the legitimate rights and interests of the protection, to avoid unnecessary losses, the following conditions caused by the failure, abnormal work or damage, our company does not assume warranty obligations, the need to pay maintenance.

a. When the product is beyond the warranty period.

b. Product damage due to the use of errors, self disassembly, improper maintenance and other reasons.

c. To open the seal products.

d. Accident factors (handling, collision, etc.) or man-made damage marks.

e. Other such as natural disasters, such as force majeure (such as earthquake, fire, etc.) caused by damage.

(3) After sales service: Failure in normal use, please contact the supplier or the company's after-sales service department, in order to provide you with services in a timely manner.

(4) About battery: See panel for battery life, it is recommended purchasing and replacing before the expiration. In order to avoid the impact of the battery on the measurement accuracy of the product.

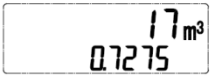
Important statement: the company's products in the design has the greatest ability to ensure the reliability of the measurement data, but can not guarantee that all products are not a problem. the loss of products measurement data caused by fault or other causes, the company will try our best to recover, but do not take responsibility for the measurement of data loss caused by the loss of users on a regular basis measurement data read and save.

## Liquid crystal display

- With the magnetic switch can switch the same menu of the display items;
- Magnetic switch to use: with a magnetic pen touch the product LCD screen icon position.

## Standard menu


Cumulative flow




Negative cumulative flow (optional)


Water temperature (optional)
Instantaneous flow L/s

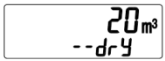

Cumulative flow (optional)
Pipe pressure (Unit : kPa)


Water temperature
Instantaneous flow m³/h

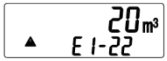

Test pulse


Display test

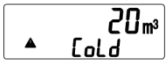
**If the meter faild, the fractional part of the cumulative volume show alarm symbols. when multiple faults ,decimal part auto cycle display.**



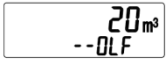

Empty pipe instruction



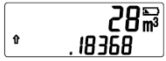

Transducer alarm
Channel ( 1, 2, 3, 4 )




Low water temperature ( Alarm below 4 ℃ )




Overload flow rate




Battery low

## Packing list

| Name | Model | Number | Remarks |
|---|---|---|---|
| Ultrasonic water meter | | 1 | * |
| Instructions | | 1 | |
| | | | |

* Expressed as the main component