使用本产品前，请务必仔细阅读本说明书。

T3-1-2-K 卡片式超声波水表

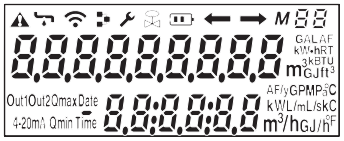
快速安装和使用说明

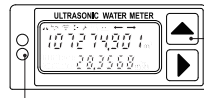
欢迎使用T3-1-2-K 卡片式超声波水表。

T3-1-2-K卡片式超声波水表是采用超声波时差测量技术，依据GB/T778.1-2007、ISO4064-1:2005等标准研发的一款高度集成的产品。

1.部件说明

T3-1-2-K 卡片式超声波水表标配有线水表，可定制无线水表。



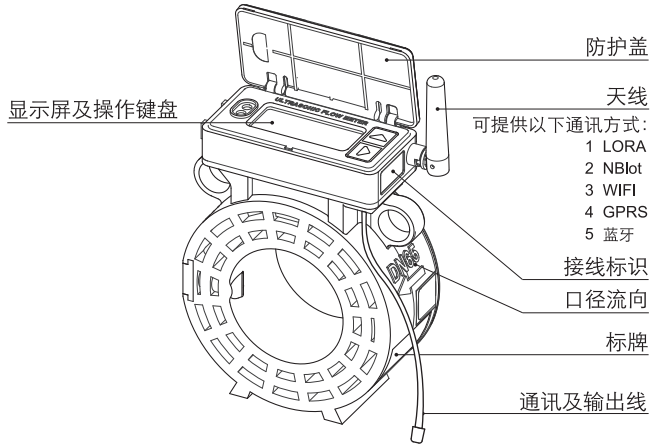


触摸式按键

红外通讯接口

液晶显示内容说明：

- 可恢复性故障标志
- 漏水检测标志
- 无线通讯标志
- 正在通讯标志
- 永久性故障标志
- 阀门开启
- 电池低警告
- 水流动方向
- 4-20mA 电流环已连接标志
- Out1Out2 脉冲输出工作标志



部件说明图

接线说明

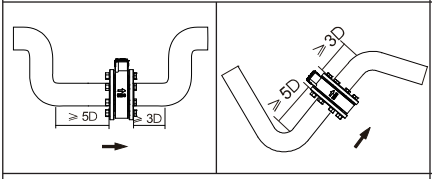
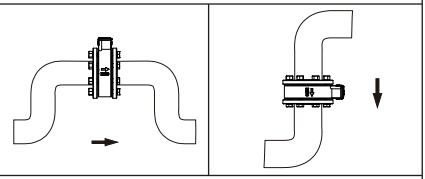
▶ RS485	▶ MBUS	▶ TTL电平	▶ RS485 & MBUS	▶ RS485 & MBUS & 双路 OCT
黑色双芯电缆	灰色双芯电缆	黑色三芯电缆	黑色四芯电缆	黑色八芯电缆
棕 485+	棕 MBUS+	棕 GND	红 MBUS+	红 MBUS+
蓝 485-	蓝 MBUS-	黄 TXD	黑 MBUS-	黑 MBUS-
		蓝 RXD	黄 485+	黄 485+
			绿 485-	绿 485-
				棕 OCT1+
				蓝 OCT1-
				白 OCT2+
				灰 OCT2-

注：MBUS 接口是可以不区分正负的

2.安装指南

2. 1 选择安装点

安装时，直管段要求上游≥5D，下游≥3D，距泵出口≥20D(D为管段外径)，且保证水流满管。

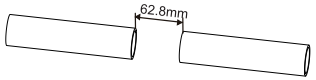
推荐的安装点	不推荐的安装点
	
管道系统中最低点处，以保证满管。 垂直向上或者斜向上流动的管段。 上游直管段≥5D	管道系统中最高点处，可能不满管。 垂直向下或者斜向下流动的管段。 上游直管段≤3D

► 注：箭头指示方向为流体流动方向。

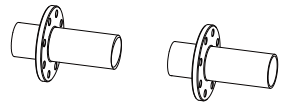
2. 2 安装方法

1、确认安装尺寸。

截管长度62.8mm { 产品厚度50.8mm
2个密封垫厚度6mm
预留空间6mm

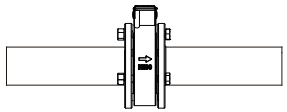


2、套装配对法兰。



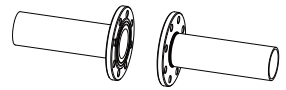
3、定位法兰。

安装3个螺栓，平均定位法兰，点焊固定



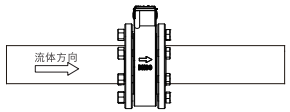
4、焊接法兰。

拆下水表，满焊法兰。



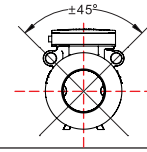
5、冷却后，加密封垫，螺栓紧固。

► 务必注意表体上流向标志箭头与实际流体是否一致

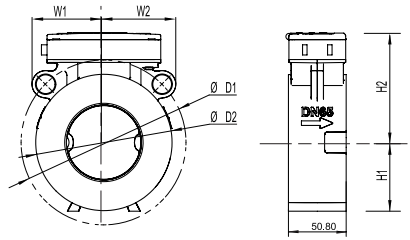


6、安装角度。

管道顶部存在不满管情况，推荐将水表安装在管道垂直方向45°角度内，推荐安装角度见下图。



2.3 水表尺寸



单位：mm

公称直径	外形尺寸					法兰尺寸					重量(Kg)
	L	H1	H2	W1	W2	外径 D	螺栓孔中心圆直径 D1	螺栓孔径×实际数量 φ×n	密封面直径 D2	密封面厚度 f	
DN50	50.8	52	91	58	58	102	125	16.5×2	102	2	0.7
DN65	50.8	60.5	97	63.5	63.5	120	145	16.5×2	120	2	0.7
DN80	50.8	70	132	68	68	135	160	18×2	135	2	0.9
DN100	50.8	80	140	79	79	158	180	16.5×2	158	2	1.0
DN125	50.8	95	145	94	94	188	210	16.5×2	188	2	1.2
DN150	50.8	107	157	106	106	212	240	20.5×2	212	2	1.4

▶ 注：本表均为理论参考值，请以实际收到产品为主。

3.菜单简介

3.1 操作方法

水表为触摸屏按键操作，在显示面板上有两个按键分别标示为“ ▲ ”和“ ▶ ”，从“ ▲ ”到“ ▶ ”的滑动为“ ▲▶ ”按键，修改键和退出键是滑动键。

键盘口诀：上键“ ▲ ”上　下键“ ▶ ”下　从上往下“ ▲▶ ”修改　从下往上“ ▶▲ ”退出

3.2 窗口显示菜单简介

窗口类	窗口	显示窗口含义或者功能
主菜单	M01	显示净累计流量以及瞬时流量
	M02	显示进水、回水温度及其温差
	M03	日历，第一行显示日期，星期；第二行显示的是小时和分钟
	M04	第一行显示信号强度、故障错误代码；第二行显示电压、温度
	M05	标定窗口
	M06	定量控制器（也称为灌溉控制器）窗口
	M07	显示ESN号码和软件版本号码

水表设置了5类菜单选项，分别为：主菜单、辅助菜单1、辅助菜单2、定量控制菜单、分时累积菜单。在主菜单界面下，用修改键“ ▲▶ ”可以进入任意菜单。

举例说明：

在主菜单M01时，按修改键“ ▲▶ ”进入月累计查询；

在主菜单M03时，按修改键“ ▲▶ ”进入辅助菜单1（M10~M19）；

在辅助菜单1下的M19菜单，按修改键“ ▲▶ ”进入辅助菜单2（M20~M2A）；

在主菜单M04时，按修改键“ ▲▶ ”进入日累计查询；

在主菜单M05时，进入启停标定状态；按修改键“ ▲▶ ”进入恒流标定状态；

在主菜单M06时，按修改键“ ▲▶ ”进入定量控制和分时累积菜单（M30~M3C）；

▶ 注：详细菜单说明请参看《超声波水表使用说明书》

4.技术参数

4. 1 流量参数

公称直径（mm）	量程比 R	流量（m^3/h）				
		始动流量	最小流量 Q1	分界流量 Q2	常用流量 Q3	过载流量 Q4
DN50	63	0.10	0.63	1.00	40.00	50.00
DN65	63	0.16	1.00	1.60	63.00	78.75
DN80	63	0.25	1.60	2.50	100.00	125.00
DN100	63	0.40	2.50	4.00	160.00	200.00
DN125	63	0.60	3.20	5.00	200.00	250.00
DN150	63	0.80	4.00	6.40	250.00	312.50

4. 2 技术参数

性能	参数
量 程 比	63 : 1
工作压力	<1.6 MPa
温度等级	T30
压力损失	ΔP10
工作环境	-25℃~55℃，IP68防护等级
显　　示	多行同时显示 9 位长累积量、 6 位长瞬时量，信号强度，电池状态、流向、故障、通讯状态等
流量单位选择	立方米,美国加仑, 公升，立方英尺, Acre Feet
操作方式	双电容触摸按键，支持滑动操作
通讯接口	物理独立的 RS485 和红外接口。可选 MBUS 接口， Lora/NB-iot 无线通讯功能, USART 接口
输　　出	可选 2 路 OCT 输出，可仿真机械水表的双脉冲输出
通讯协议	同时支持 MBUS， MODBUS， ASCII， CJ188
供　　电	3.6V4Ah 锂电池供电，寿命>10 年，空管及零流速下自动省电功能
	DC12~30V，MBUS接口外供电；断电后数据永久保存
功　　耗	< 0.1mW
材　　质	管体材质：改性增强尼龙； 其他：PC/ABS

5.标定方法

本表采用恒流法标定。

恒流法是指在设定的流量点,让标定装置(或标准表)和被检水表进入稳定的流量状态,在相同的时间内所测得的流量来进行标定的方法。

不同的标定方法会造成误差,如采用启停法检定本水表,会产生误差。使用启停法检定时,应尽量延长标定时间,每次开启持续时间至少大于 60 秒。持续时间越短,启停过程引起的误差越显著。

6.其他

关于本产品的详细菜单说明请参看《超声波水表使用说明书》。

Read the instruction carefully before installation

T3-1-2-K Sandwich-type Ultrasonic Water Meter

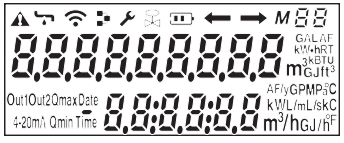
Quick Installation and Operation

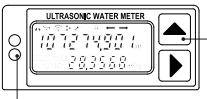
Welcome to use T3-1-2-K ultrasonic water meter.

The highly integrated T3-1-2-K sandwich-type ultrasonic water meter is designed and manufactured strictly according to GB/T778.1-2007, ISO4064-1:2005 etc., based on ultrasound transit-time measurement technology.

1.Parts Description

T3-1-2-K ultrasonic water meter has wired type as standard configuration, wireless type need to be customized.



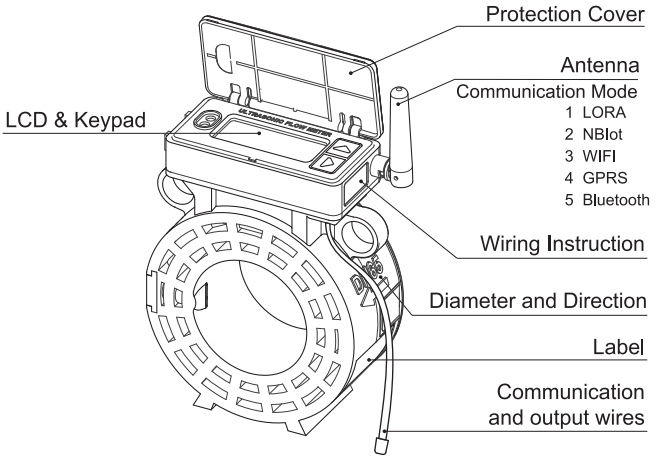


Touch Key

Infrared interface

LCD Instruction

- Alarm/ Error
- Leak Detector
- Wireless Communication
- In Communication
- Permanent Fault
- Valve Open
- Battery Low Warning
- Liquid Direction
- 4-20mA Current Loop Connection
- Out1Out2 Pulse Output



Parts Description

Wiring Instructions

▶ RS485
Black Two-core cable
Brown 485+
Blue 485-

▶ MBUS
Grey Two-core cable
Brown MBUS+
Blue MBUS-

▶ RS485 & MBUS
Black Four-core cable
Red MBUS+
Black MBUS-
Yellow 485+
Green 485-

▶ TTL
Black Three-core cable
Brown GND
Yellow TXD
Blue RXD

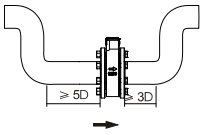
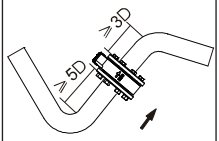
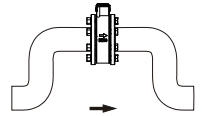
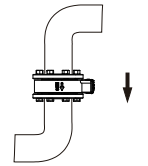
▶ **RS485 & MBUS & Two way OCT**
Black Eight-core cable
Red MBUS+
Black MBUS-
Yellow 485+
Green 485-
Brown OCT1+
Blue OCT1-
White OCT2+
Grey OCT2-

▶ PS: MBUS does not need to distinguish between positive and negative.

2.Installation Instructions

2. 1 Choose the installation point

When install the water meter, the upstream straight pipe line should be ≥5D, downstream straight pipe line should be ≥3D, 20D from the pump(D is the pipe diameter), and the water should be full of pipe lines.

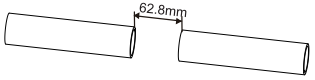
Correct installation point		Wrong installation point	
			
Lowest point of the pipe line, water will be full of pipe. Flow is vertically or obliquely upward. Upstream straight pipe line≥5D.		Highest point of the pipe line, water would be not full of pipe. Flow is vertically or obliquely downward. Upstream straight pipe line≤3D.	

► Note: Arrow direction is the flow direction.

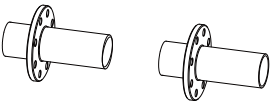
2. 2 Installation Method

1.Confirm installation size

Cut 62.8mm of the pipeline { water meter thickness is 50.8mm; 2 pcs seal gasket thickness is 6mm; reserve space is 6mm }

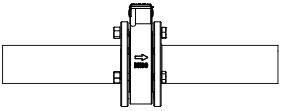


2. Install companion flange



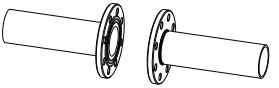
3.Fixed flange

Install water meter with 3 screws to fix the flange properly, then spot welding.



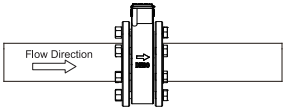
4.Weld flange

Take out water meter and weld flange.



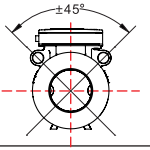
5.Install water meter with seal gasket after cooling, tighten the screws

► Make sure direction sign on water meter is same with the real flow direction.

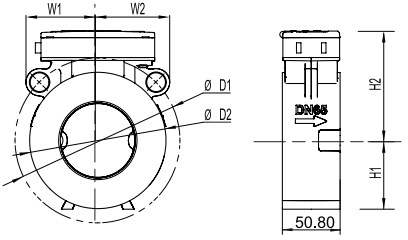


6.Installation angle

Top of the pipe line may be not full of water, suggest to install the water meter on vertical direction of pipe line within a ±45-degree angle, pls refer to below picture.



2.3 Water Meter Dimension



▶ Note: Below is theoretical value, pls refer to actual received product. to be customized

Unit: mm

Nominal Diameter	Flow Meter Dimension					Flange Dimension					Weight (Kg)
	L	H1	H2	W1	W2	Outside Diameter D	Diameter of Bolt Circle D1	Bore Diameter x Quantity φ×n	Ralsed Face		
									Outside Diameter D2	Height f	
DN50	50.8	52	91	58	58	102	125	16.5×2	102	2	0.7
DN65	50.8	60.5	97	63.5	63.5	120	145	16.5×2	120	2	0.7
DN80	50.8	70	132	68	68	135	160	16.5×2	135	2	0.9
DN100	50.8	80	140	79	79	158	180	16.5×2	158	2	1.0
DN125	50.8	95	145	94	94	188	210	16.5×2	188	2	1.2
DN150	50.8	107	157	106	106	212	240	20.5×2	212	2	1.4

3. Menu Instruction

3.1 Operation Method

Water meter is equipped with two touch keys " ▲" and " ▶ ", slide from " ▲" to " ▶ " is " ▲▶ " key to edit, slide from " ▶ " to " ▲" is the key to quit.

Formula: up click "▲" is up; down click "▶" is down;
Slide from up to down "▲▶" is modification ; Slide from down to up "▶▲" is quit.

3.2 Windows Display Instruction

Windows	No.	Windows Functions
Main Menu	M01	Display net cumulative and instantaneous flow
	M02	Display supply and return water temperature and temperature difference.
	M03	Calendar, display date and week on first line, display hour and minute on second line.
	M04	Display signal strength and error code on first line, display voltage and temperature on second line.
	M05	Calibration Menu
	M06	Batch Controller(Irrigation controller)
	M07	Display ESN and software version

Water meter includes 5 kinds of menus: main menu, secondary menu 1, secondary menu 2, batch control menu and time-accumulated menu. You can enter any menus by the modification key " ▲▶ ".

Example:

On M01, press " ▲▶ " to access month cumulative flow.

On M03, press " ▲▶ " to access secondary menu 1 (M10~M19).

On M19 of secondary menu 1, press " ▲▶ " to access secondary menu 2 (M20~M2A).

On M04, press " ▲▶ " to access day cumulative flow.

On M05(start-stop calibration state), press " ▲▶ " to access constant-current method calibration state.

On M06, press " ▲▶ " to access batch control and time-accumulative menu (M30~M3C).

▶ Note: Pls refer to ultrasonic water meter user manual for details of the menus.

4.Technical Parameter

4. 1 Flow Rate

Nominal Diameter (mm)	Measurement Range Ratio R	Flow Rate (m³/h)				
		Starting Flowrate	Minimum Flowrate Q1	Transitional Flowrate Q2	Permanent Flowrate Q3	Overload Flowrate Q4
DN50	63	0.10	0.63	1.00	40.00	50.00
DN65	63	0.16	1.00	1.60	63.00	78.75
DN80	63	0.25	1.60	2.50	100.00	125.00
DN100	63	0.40	2.50	4.00	160.00	200.00
DN125	63	0.60	3.20	5.00	200.00	250.00
DN150	63	0.80	4.00	6.40	250.00	312.50

4. 2 Technical Parameter

Performance	Parameters
Measurement Range Ratio	63 : 1
Working Pressure	< 1.6 MPa
Temperature	T30
Working Environment	-25°C~55°C，IP68 Protection
Pressure Loss	ΔP10
Display Range	Multi-lines show 9-bit cumulative flow, 6-bit instantaneous flow, signal strength
	flow direction, error, communication status
Unit	m³, USG, Liter, cubic foot, Acre Feet
Operating Mode	Two capacitive touch keys support sliding operation.
Communication Interface	Physically independent RS485 and infrared interface. LORA/ NB-IOT, WIFI, USART are optional.
Output	2 way of OCT output is optional, can simulate dipulse output of mechanical water meter.
Communication Protocol	MBUS， MODBUS， ASCII， CJ188
Power Supply	3.6V 4Ah lithium battery (battery life>10 years). It will operate power save functions when there is no water and flow in pipe
Other	DC12~30V external power supply through MBUS interface; data will be permanently saved after power off.
Power consumption	<0.1mW
Material	Pipe body: modified nylon; others: PC/ABS

5.Calibration Method

Our water meter is calibrated via constant-current method.

Constant-current method is to make the calibration device (standard water meter) and tested water meter into stable flow state at a set flow point, calibrate the water meter by measuring accumulative flow at the same time.

Different calibration methods may cause the error. If you use start-stop method to calibrate our water meter, it may cause error. Pls try to extend the calibrate time when you use start-stop method to calibrate our water meter, make sure the duration of each turn on time should be more than 60 seconds at least. The less time you calibrate, then bigger error you will get.

6.Other

Pls refer to ultrasonic water meter user manual for details of the menu instruction。