CPD series Clamp-on Ultrasonic Flow Sensor

User Manual

User Manual（V1.8)

Shanghai Xunyin Technology Co., Ltd（XY-TEK）

June, 2026

Content

1. INTRODUCTION

XY-TEK is a technology-driven enterprise specializing in the R&D, production, and sales of ultrasonic flow sensors. We are committed to providing accurate and reliable flow sensors for liquid transmission tubing in medical devices, biopharmaceuticals, new energy, and industrial equipment, enhancing the automation, informatization, and intelligence of liquid flow measurement.

The XY-TEK CPD series clamp-on ultrasonic flow sensor features a compact design and can perform measurements and output without requiring an external circuit system. The sensor is directly clamped onto the exterior of the plastic tubing for precise measurement of the liquid flow.

The CPD series flow sensor does not make direct contact with the liquid, and it does not cause any contamination, making it especially suitable for applications with high sanitation requirements, such as medical devices, biopharmaceuticals, the food industry, industrial automation, renewable energy, semiconductor fields, and liquid flow monitoring.

Product Features

- High accuracy and stability
- Non-contact measurement, with no direct contact with the liquid, ensuring hygiene and safety
- Bidirectional measurement with fluid volume calculation capability
- Sensor, circuit system, and display integrated into a single unit
- No clogging, no flow redirection, and no dead zones, ensuring minimal fluid pressure loss
- Provides standard output methods for seamless integration with customer systems
- Custom calibration for specific plastic tubing material, dimension, temperature, and liquid type

Applications

- **Renewable Energy**: Liquid mixture ratios, cooling liquid circulation systems

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

- **Semiconductors**: CMP, slurry mixing, wet etching, wafer/mask cleaning, electroplating, cooling systems
- **Industrial Automation**: Spraying equipment, cooling systems, lubrication systems, liquid transportation systems, water treatment, and wastewater treatment systems
- **Medical Devices**: Cooling systems, supply systems, flushing systems
- **Biopharmaceuticals**: Chromatography, upstream and downstream feeding, filtration

1.1 Symbols and Abbreviations

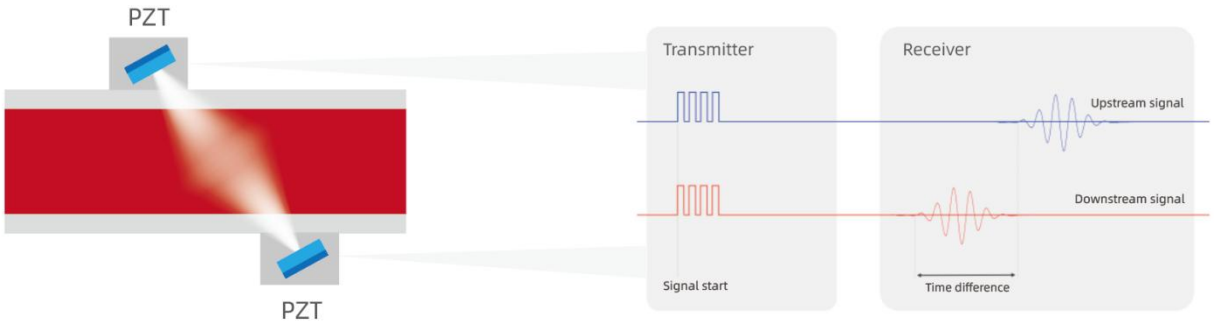
Symbols	Description
	**Warning!** This safety symbol precedes critical information that must be strictly followed to prevent injury or fatal hazards.
	**Attention!** This safety symbol precedes operational guidelines that must be strictly followed to prevent equipment damage or adverse.

1.2 Working Principle

The XY-TEK CPD series ultrasonic flow sensor features a clamp-on design, allowing for easy clamping on the exterior of plastic tubing for accurate flow rate measurement. This sensor utilizes advanced ultrasonic transit-time difference technology, providing exceptional accuracy and reliability.

During the measurement process, two PZT crystals inside the sensor are positioned upstream and downstream, alternately sending and receiving ultrasonic signals to each other. The flow of liquid affects the propagation of ultrasonic waves, causing the transmission time of ultrasonic waves in the upstream direction to always be greater than that in the downstream direction. By accurately measuring the time difference of transmission in these two directions, the sensor can quickly and accurately calculate the liquid flow rate.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com



1.3 Packing List

Standard Item	Description
1	The Flow Sensor
2	Flow Sensor Cable (Standard 5m)
3	6-Pin Terminal
Optional	**Description**
1	USB Data Converter
2	USB2.0 Cable

2. TECHNICAL SPECIFICATIONS

2.1 Measurement Accuracy and Repeatability

Product Model	Flow Range	Low Flow Cut-off [1]	Repeatability[2][3]
CPD025NB CPD006MB	0-5L/min	±10mL/min	±0.1% F.S.
CPD032NB CPD008MB	0-10L/min	±15mL/min	±0.1% F.S.
CPD038NB CPD010MB	0-15L/min	±20mL/min	±0.1% F.S.

Shanghai Xunyin Technology Co., Ltd（XY-TEK）
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

CPD050NB **CPD012MB**	0-30L/min	±30mL/min	±0.1% F.S.
CPD063NB **CPD016MB**	0-40L/min	±40mL/min	±0.1% F.S.
CPD075NB **CPD020MB**	0-50L/min	±50mL/min	±0.1% F.S.
CPD100NB **CPD026MB**	0-80L/min	±80mL/min	±0.1% F.S.
CPD125NB **CPD032MB**	0-100L/min	±100mL/min	±0.1% F.S.

Notes:

[1] Low Flow Cut-off: When the actual flow rate falls below the set threshold, the sensor output is automatically set to zero to avoid false measurements caused by zero drift, noise interference, or minor flow.
[2] Repeatability: ±0.1% F.S. (full scale). This specification can only be achieved under stable liquid flow conditions. If the flow field has pulsation or fluctuation, repeatability will be affected.
[3] Thermal Equilibrium: The sensor and tubing must be allowed to stabilize for 30 minutes after power-on before measurement; otherwise, repeatability will be affected.

2.2 Calibration Conditions

The sensor is calibrated at the factory under the following standard conditions:

- Tubing: Typically customer-supplied tubing
- Liquid: Water (22°C ± 3°C) (default)
- Thermal Equilibrium: The sensor is clamped onto a rigid plastic tube. Measurement begins after 30 minutes of power-on.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

2.3 Applicable Tubing Characteristics

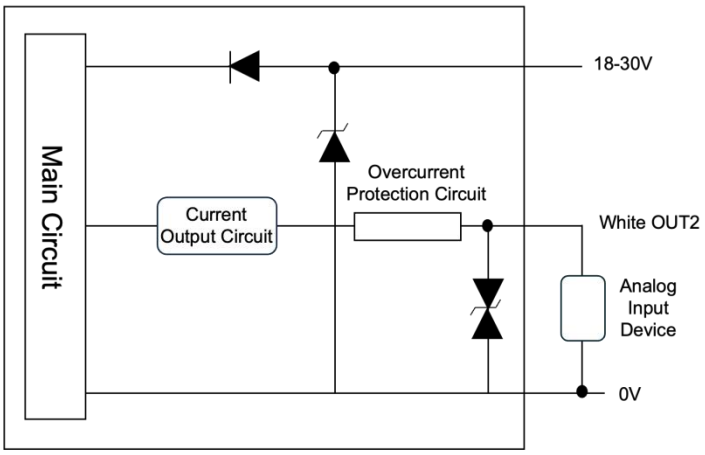
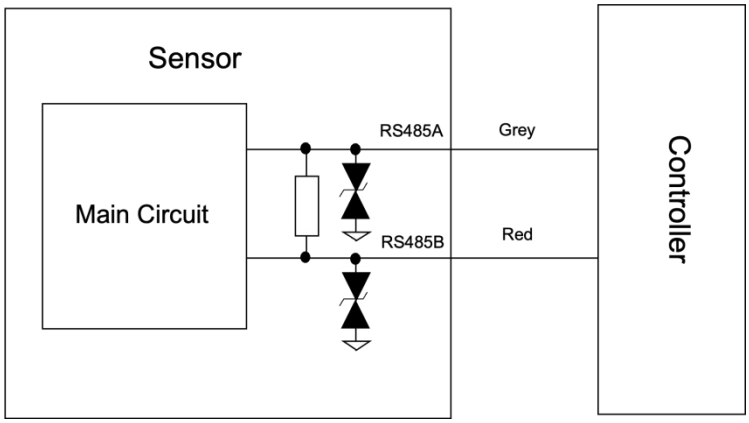
Tubing Material: PFA, PTFE, PP, PU or other rigid plastic/resin tubes with smooth inner and outer surfaces.

Product Model (Imperial)	Outer Diameter	Inner Diameter	Product Model (Metric)	Outer Diameter	Inner Diameter
	inch	mm		mm	mm
CPD025NB	1/4”	3 ~ 5mm	**CPD006MB**	6mm	3 ~ 5mm
CPD032NB	5/16”	5 ~ 7mm	**CPD008MB**	8mm	5 ~ 7mm
CPD038NB	3/8”	5 ~ 8mm	**CPD010MB**	10mm	5 ~ 8mm
CPD050NB	1/2”	6 ~ 11mm	**CPD012MB**	12mm	6 ~ 11mm
CPD063NB	5/8”	10 ~ 14mm	**CPD016MB**	16mm	10 ~ 14mm
CPD075NB	3/4”	10 ~ 17mm	**CPD020MB**	20mm	10 ~ 17mm
CPD100NB	1”	15 ~ 22mm	**CPD026MB**	26mm	15 ~ 22mm
CPD125NB	1 1/4”	20 ~ 28mm	**CPD032MB**	32mm	20 ~ 28mm

Note:
The tubing examples listed above are for common reference only; the outer and inner diameters shown are for guidance. When selecting a sensor, factors such as tubing dimensional tolerance, material, and other relevant aspects should be considered comprehensively.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

2.4 Sensor Interface

Interface Type	Detailed Specifications
Current Output	3 current output modes available: 4 – 20 mA, 0 – 20 mA, 0 – 24 mA. For voltage output conversion, load can be connected to ground; load resistance must not exceed 600 Ω. 
RS485 Interface	RS-485 Bus operation: Supports up to 12 sensors. 

Shanghai Xunyin Technology Co., Ltd（XY-TEK）
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752　Mail：global@xy-tek.cn　Website：www.xy-tek.com

Pulse Output

Pulse output, two modes: PNP, NPN
Maximum output current 100mA. Minimum load resistance is related to operating voltage.
Recommended:12V-250 Ω， 15V-500 Ω， 24V-1000 Ω， 30V-1200 Ω.

Maximum pulse output frequency: 10 kHz.

Pulse setting limits:
When using "pulse equivalent" setting, the lower limit is:

$$\frac{1}{10000/(Flow_{max}/60)}$$

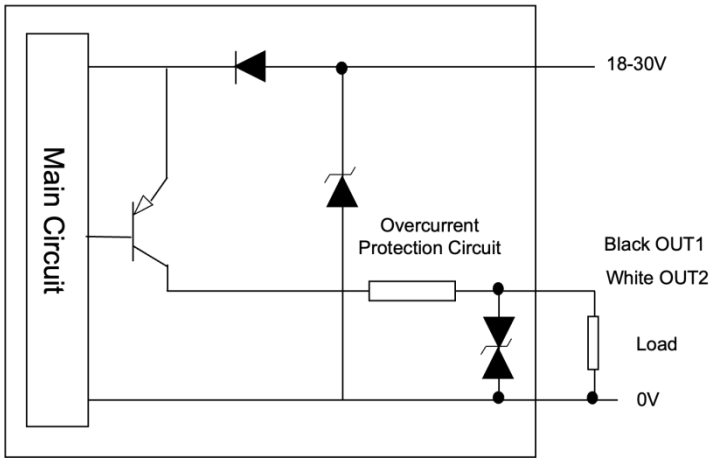
When using "number of pulses per 1 mL" setting, the upper limit is:

$$\frac{10000}{Flow_{max}/60}$$

Where $Flow_{max}$ is the maximum flow rate in mL/min.

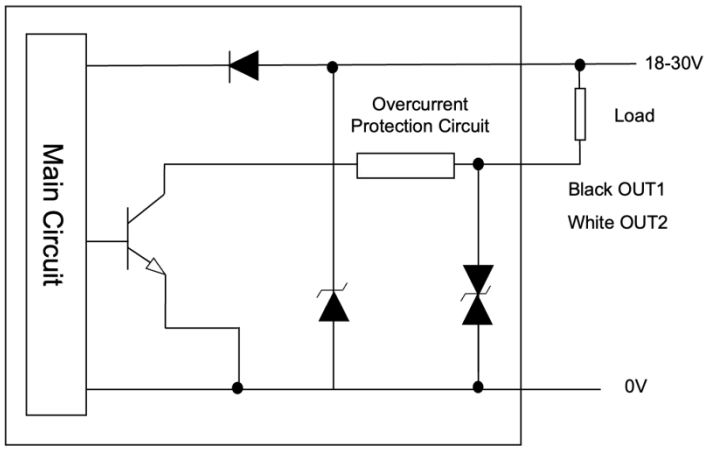
Note: Due to display digit limitations, parameters beyond the display range are recommended to be set via host computer software.

PNP (Default)



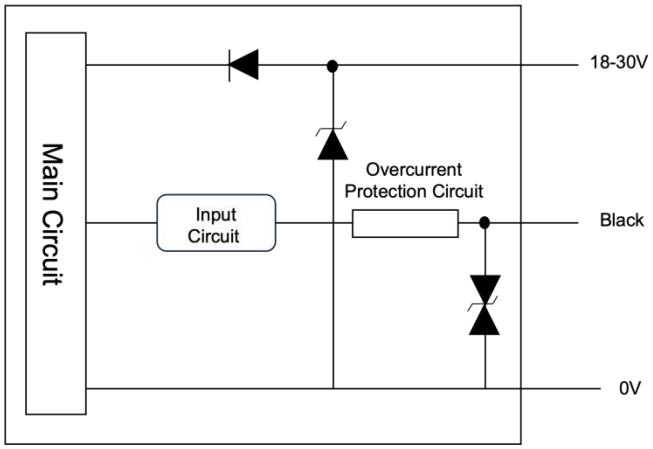
Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

NPN (Optional)



Digital input

Configurable for zero point calibration, volume reset, start filling, etc.
The grounding time must be greater than 20 ms.

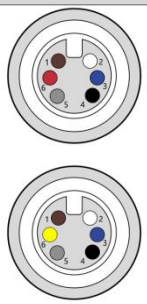


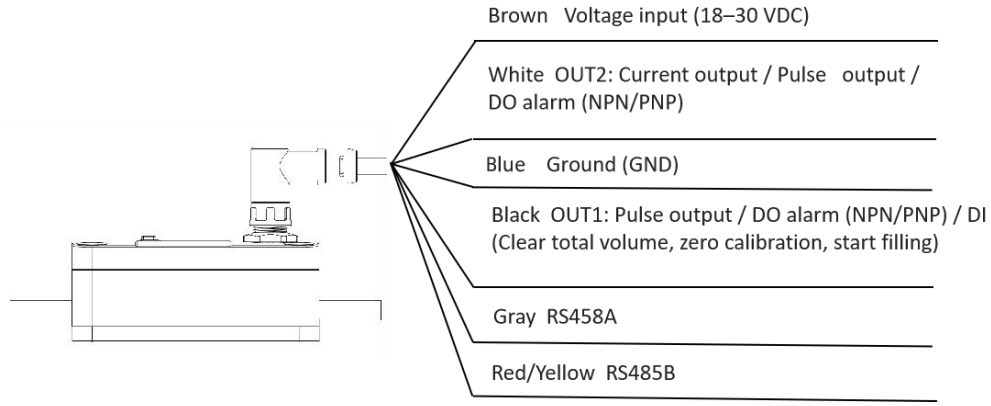
2.5 Electrical Specifications and Connections

Electrical Parameters	Detailed Specifications
Operating Voltage	18-30VDC
Current Consumption	24V power supply, current consumption <30mA without external load; With external load, current consumption >30mA, but not exceeding 100mA
Electrical Connection	6-pin cable (with flying wire at the end)

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

Cable color and function assignment

Male Connector (cable)	Core	Color	Function
	1	Brown	Voltage Input (18-30VDC)
	2	White	OUT2: Current output / Pulse output / DO alarm (NPN/PNP)
	3	Blue	Ground (GND)
	4	Black	OUT1: Pulse output / DO alarm (NPN/PNP) / DI (clear total volume, zero correction, start filling)
	5	Gray	RS485A
	6	Red	RS485B



2.6 General Data

General Parameters	Detailed Specifications
Measurement Principle	Ultrasonic time-of-flight method
Measurable Liquids	Water, chemical solutions, oil, glue, grinding fluid, etc. (excluding large solid particles and air bubbles)
Calibration	Manufacturer default calibration: 22℃±3℃ (water)
Sensor Housing	Plastic
Liquid Temperature	0℃ - 70℃
Ambient Temperature	0℃ - 60℃
Storage Temperature	-20℃ - 70℃
Operating Humidity	10% - 90% RH (non-condensing)
Protection Rating	IP65

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

Installation	Thread mounting
Cover Bolt Torque	CPD025NB: recommended 35 cN • m CPD038NB, CPD050NB, CPD075NB, CPD100NB: recommended 45 cN • m

2.7 Scope of Supply and Accessories

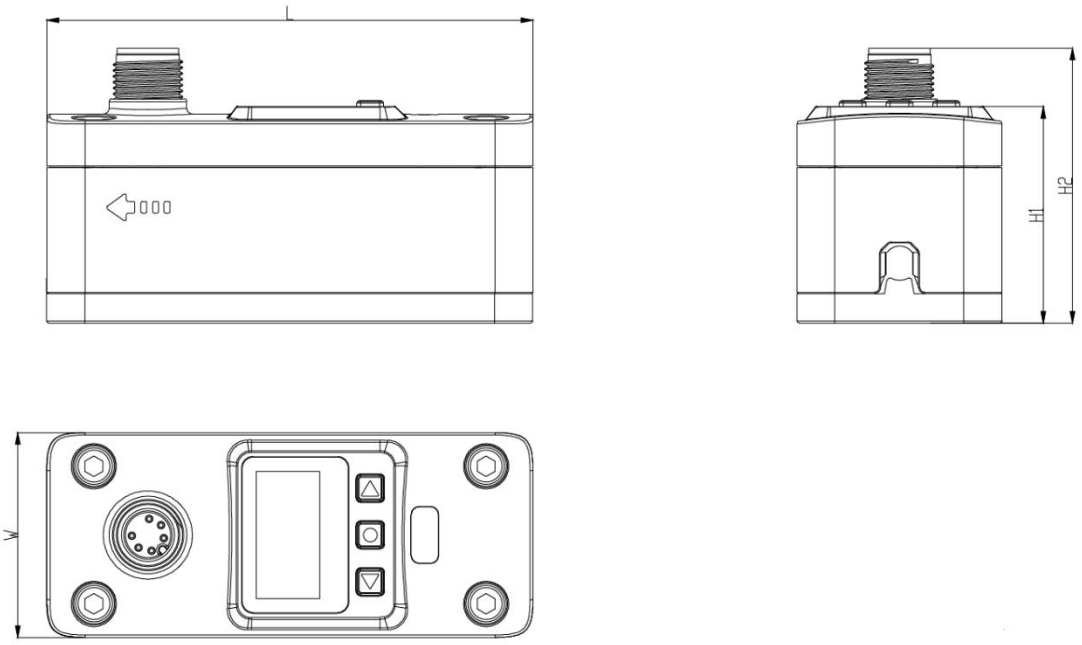
Name	Detailed Specifications
Scope of Supply	CPD Series Flow Sensor
	User Manual (quick start guide)
	Factory Calibration Report
Required Accessories	6-core shielded cable (standard length 5m)
Optional Accessories	USB data converter (for connecting the sensor to the computer)
	Flow Viewer flow monitoring software
	USB 2.0 printer cable (for connecting the USB data converter to the computer)

2.8 Sensor Dimensions

Product Model	Product Dimensions (L x W x H)
CPD025NB/CPD006MB	83 x 35 x 37、47 mm
CPD032NB/CPD008MB	83 x 39 x 37、47 mm
CPD038NB/CPD010MB	80 x 39 x 38、48 mm
CPD050NB/CPD012MB	80 x 49 x 43、53 mm
CPD063NB/CPD016MB	82 x 53 x 45、55 mm
CPD075NB/CPD020MB	87 x 55 x 50.5、60.5 mm
CPD100NB/CPD026MB	87 x 65 x 57、67 mm
CPD125NB/CPD032MB	96 x 78 x 64、74mm

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

External dimensions of the sensor



3. SAFETY PRECAUTIONS

Before using the flow sensor and its accessories, please read this user manual carefully.

- Upon first opening the package, check the integrity of the device for any damage and store it safely.
- All environmental conditions must meet the specified requirements for installation and subsequent operation (see "4. Technical Specifications").
- The user will be responsible if the flow sensor is not connected correctly as required.
- Do not drop the flow sensor, as it may crack or become damaged, affecting measurement accuracy.

3.1 Operator Requirements

Operators must meet all the following conditions and comply with relevant regulations:

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

1. Trained and qualified personnel
2. Technicians authorized by the factory
3. Familiarity with and understanding of relevant regulations and documentation

3.2 Intend Usage

1. XY-TEK clamp-on flow sensors are designed solely for measuring liquid flow non-invasively.
2. The USB data converter allows the sensor to communicate with a computer via a serial interface. When used with the Flow Viewer flow monitoring software, it helps users adjust sensor parameters to fit specific applications and assists in troubleshooting.
3. All uses unrelated to the above purposes are prohibited, as they may damage the sensor and data converter.

3.3 Workplace Conditions

Before using the sensor equipment

1.Check temperature and pressure conditions to meet the sensor's operational requirements.

2.Ensure that the sensor and other equipment are installed correctly.

The flow sensor is not suitable for the following situations

1.Gas flow measurement

2.Measurement of explosive liquid flow

3.Outdoor environments

4.Metering equipment for billing purposes

3.4 Product Safety

The flow sensors, Flow Viewer software, USB data converters, and other accessories provided by XY-TEK comply with applicable safety regulations. Users must ensure that these hardware and software devices are installed and operated in a manner that does not compromise safety. All devices have been tested at the XY-TEK factory and are delivered in a safe condition.

Note： 

- Only users who have read and understood this guide may modify the sensor parameters.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

- Before modifying the sensor parameters, users must back up the original sensor configuration.
- Do not disassemble the internal structure of the flow sensor and USB data converter.
- The flow sensor and USB data converter must be protected from moisture.

4. SENSOR USAGE

4.1 Sensor Wiring

There are typically two scenarios for connecting the sensor wires.

1.Connecting the Sensor to Data Acquisition Equipment or PLC with a Separate Power Supply

- Disconnect the power supply.
- Ground the black wire of the sensor cable and connect the red wire to 12-30Vdc (see "4.5 Electrical Specifications and Connections")
- Connect other necessary output and input wires to the data acquisition equipment or PLC (see "4.5 Electrical Specifications and Connections")
- Turn on the power supply.
- Cut off any unused exposed wires to avoid short circuits.  Attention

2.Connecting the Sensor to a Computer via USB Data Converter

- Connect the sensor to the USB data converter.
- Use the provided USB cable to connect the USB data converter to the computer, which will power both the USB data converter and the sensor.
- If necessary, connect the USB data converter to an external controller, such as data acquisition equipment or PLC.

Precautions 

- Check and ensure that the connectors used are suitable and compatible with the measurement system.
- When inserting the wires, ensure that the flow sensor's connector is dry.
- When installing the flow sensor, be careful not to damage the functionality of the tubing system.
- Always inspect plugs and pins for damage before connecting the flow sensor.
- Do not use the flow sensor if any part of it is damaged.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

4.2 Clamp the Sensor on the Tubing

- To measure the flow rate properly, the CPD series flow sensor must be clamped onto the tubing.
- Before installation, ensure the tubing is not deformed, damaged, or contaminated.
- Ensure that the tubing size and material align with the dimensions of the CPD series flow sensor.
- Air in the tubing can lead to measurement errors or disrupt ultrasonic coupling.
- Make sure there is no dirt or residue in the tubing.
- If necessary, clean the CPD series flow sensor before inserting the tubing into the measurement channel.

To install the sensor onto the tubing, please follow these steps.

Step 1: Unscrew the four screws from the front of the sensor and remove the bottom cover.

Step 2: Insert the plastic hard tubing into the measurement channel of the sensor.

Step 3: Close the bottom cover to secure the plastic hard tubing within the measurement channel of the sensor.

Step 4: Screw in the four screws from the front of the product, avoiding overtightening or leaving them too loose.

Note

- Do not apply excessive force when closing the sensor cover.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

- Ensure that the bottom cover of the sensor fits perfectly with the sensor body to avoid fluctuations in the flow value.
- The size and material of the plastic hard tubing should match those used in the factory calibration.
- The flow sensor should be clamped onto the straight section of the plastic hard tubing, ensuring that the length of the straight section before entering the sensor is greater than 10 times the internal diameter of the tubing, and the length of the straight section after exiting the sensor is greater than 5 times the internal diameter of the tubing.

4.3 Sensor Use

- Install the sensor and fill the tubing with the liquid to be measured.
- Ensure no bubbles in the tubing, and turn on the power.
- Once powered on, the sensor will immediately begin flow measurement and output data.

Before Measurement  Attention

(1) Ensure the tubing used meets the requirements of the CPD series sensors (refer to "2.3 Tubing Characteristics").
(2) Before each measurement, check the cable, connectors, and pins for any breaks or damage, as they may lead to measurement errors. If any damage is found, please contact our after-sales service for replacement.
(3) Ensure the liquid temperature is the same as the temperature at which the CPD flow sensor was adjusted and calibrated.

4.4 Zero Calibration

It is recommended to perform a zero calibration before each measurement to eliminate any zero point drift that may occur due to changes in temperature, liquid type, physical properties of the tubing, or sensor installation position.
Ensure that the flow sensor is correctly clamped onto the exterior of the tubing, and the tubing is filled with liquid without any bubbles.
Completely stop the liquid flow, and perform the zero calibration using one of the following methods:

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

- Set the sensor's digital input to zero point calibration, and input a digital signal (ground for 20 ms) through the red wire of the sensor cable to initiate zero calibration.
- Connect the sensor to a USB data converter and use the XY-TEK Flow Viewer monitoring software to start the zero calibration.

4.5 Sensor Adjustment and Calibration

To ensure that customer accuracy requirements are met, all flow sensors are pre-adjusted for relevant parameters based on customers' accuracy requirements before shipment.

Additionally, XY-TEK recommends regular calibration of flow sensors. Ideally, the time between re-calibrations should not exceed 24 months.

Besides factory calibration, customers can also perform on-site calibration. For more information about this process, please contact the XY-TEK after-sales service team.

4.6 Factors Affecting the Measurements Accuracy

(1) Correct Calibration

Clamped flow sensors can be calibrated for different plastic hard tubing materials and sizes, temperatures, and liquids. In actual use, measurement accuracy can only reach its best when the plastic hard tubing material and size, measurement temperature, and liquid type are consistent with the factory calibration conditions.

(2) Temperature

Fluctuations in temperature can cause changes in the acoustic properties of the plastic hard tubing and liquid; therefore, it is essential to ensure that the actual operating temperature of the sensor matches the calibration temperature. To minimize the impact of temperature variations on measurement accuracy, we recommend clamping the sensor onto the hard tubing for 30 minutes to reach thermal equilibrium before starting measurements. The temperature of the liquid should differ from the calibration temperature by less than ±5°C to ensure accuracy. If the liquid temperature during actual use differs from the calibration temperature by more than ±5°C, it is advisable for users with the capability to re-calibrate based on the actual temperature and adjust the sensor's correction factor to further improve accuracy.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

(3) Liquid Type

The sensor is factory-calibrated by default using water at 22°C ± 3°C. The temperature, concentration of dissolved substances, bubbles, or solid particles in the liquid being measured may affect accuracy. If the actual liquid cannot be provided to the factory for calibration, the sensor can first be calibrated with water, and then an on-site calibration can be performed to obtain a correction factor.

(4) **Rigid Plastic Tubing Size and Material**

The appropriate size of the rigid plastic tubing is one of the critical factors for ensuring the normal operation of the sensor.

If the rigid plastic tubing is too large, it may be difficult to fit into the sensor and close the cover, making it challenging for the ultrasonic waves to enter the rigid plastic tubing and effectively measure the flow.
If the rigid plastic tubing size is too small, a large air gap may form between the tubing and the sensor, hindering the propagation of ultrasonic waves. Therefore, it is essential to use the recommended rigid plastic tubing size for a specific sensor model. Different materials have significantly different physical properties, especially affecting sound velocity. The factory calibration takes these factors into account and uses appropriate sensor parameter configurations for specific plastic hard tubing materials to improve measurement accuracy.

(5) Sensor Installation

To ensure optimal measurement accuracy, it is best to clamp the sensor onto a straight section of the rigid plastic tubing. Sudden bends or curves in the tubing can affect the flow field distribution of the liquid, introducing more uncertainty into the measurements. If possible, ensure that the length of the straight section before the sensor is greater than 10 times the internal diameter of the tubing, and the length of the straight section after the sensor is greater than 5 times the internal diameter of the tubing.
When clamping the sensor onto the tubing, keep the measurement channel clean to avoid excessive accumulation of dust and acoustic coupling agents (such as petroleum jelly). If there are other objects in the measurement channel, use a mild chemical cleaner or an alcohol-based surface cleaner to wipe it clean.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

In some fluid-filling tubing with flow switch valves, it is recommended not to install the sensor after the switch valve, as the liquid in the section of the tubing after the valve may drain, creating an empty tubing. This could lead to the sensor missing part of the liquid volume during the next filling batch. The sensor should be installed on the side of the fluid pump that generates positive pressure or in a section of the tubing that is always filled with liquid, as air bubbles in the tubing can also introduce measurement errors.

(6) Acoustic Coupling

If there are air gaps in the propagation path of the ultrasonic waves, the waves will be reflected at the air interface, preventing effective transmission through the fluid. To avoid any small air gaps between the sensor and the plastic hard tubing, a thin layer of acoustic coupling agent, such as petroleum jelly or other grease, is typically applied to the surface of the plastic hard tubing. Water-based coupling agents used for ultrasound can dry out and form deposits, leading to measurement errors; therefore, they are not suitable for use with flow sensors.

Some rigid plastic tubing materials have strong acoustic coupling properties and can work well without a coupling agent. It is advisable to have the factory test and evaluate specific materials to decide whether a coupling agent is needed.

Please note that water-based coupling agents commonly used in medical ultrasound (B-scan) are not suitable for this sensor, as they will gradually dry out and form residues, leading to measurement errors.

(7) Zero Calibration

Due to changes in environmental temperature, liquid, and the physical properties of the rigid plastic tubing, the ultrasonic flow sensor may experience slight zero drift after being used for a period of time, necessitating zero calibration.

During zero calibration, it is essential to ensure that the liquid flow is completely stopped. If the liquid is flowing during the zero calibration process, it will introduce errors in both the calibration and flow measurement. Zero calibration can be performed via the sensor display screen or through a USB data converter using the XY-TEK Flow Viewer software.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

4.7 Sensor Disassembly and Storage

If you need to disassemble and store the sensor after the measurement process is complete, please follow these steps:

(1) Disconnect the sensor power supply;

(2) Unscrew the 4 screws on the front of the sensor and remove the bottom cover;

(3) Remove the plastic rigid tube from the measuring channel;

(4) Close the bottom cover of the sensor and retighten the four screws to secure it.

After removing the flow sensor, check for any residual media or any other type of dirt or grime, and clean the sensor if necessary. Store the sensor according to the storage specifications. Ensure it is kept in a safe place where it will not fall, and that the plug remains dry.

4.8 Sensor Cleaning

Ensure that no cleaning agents or disinfectants leak into the sensor plug. For cleaning the sensor, we recommend using commonly used cleaning agents and/or recommended disinfectants listed below. To prevent stains and dirt from drying, all residue should be cleaned after each use.

To clean the flow sensor, use a lint-free cloth. Be sure to remove any dirt from the clamping area as well. Additionally, adhere to the applicable laws and regulations in your country/region and specific hygiene regulations for your application.

Note:

- The sensor should not be immersed in cleaning or disinfecting solutions.
- The sensor is not suitable for cleaning using machinery.
- The sensor should not undergo sterilization processes, especially steam sterilization or high-pressure sterilization.

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com

Shanghai Xunyin Technology Co., Ltd.

Address: Building 7, No. 410 Jinggu Road, Minhang District, Shanghai

Postcode: 200245

Tel: +86-21-33885752

Email:global@xy-tek.cn

Website: www.xy-tek.com

XY-TEK Linkedin XY-TEK Website

Appendix

Revision History

Date	Description	Person	Vision
2025/03/07	Initial Creation	L.L	V1.0
2025/05/08	Revised working principle diagram, product installation diagram, and flow range	CM.L.	V1.1
2025/06/08	Revised sensor wiring diagram, cable color and function assignment; revised packing list (5-core terminal), shielding wire (none)	CM.L. & JL.R	V1.2
2025/07/01	Added sensor models	L.L.	V1.3
2025/07/31	Added specifications for ambient temperature, reading accuracy, and repeatability	HY.C	V1.4
2025/09/29	Added 6-core version, expanded sensor models	HY.C	V1.5
2025/11/13	Added metric tube diameter models	HY.C	V1.6
2026/01/07	Modified sensor external dimensions, removed 5-core version	HY.C	V1.6.1
2026/05/28	Added pulse output description, modified cable colors	HY.C	V1.7
2026/06/11	Added three models	HY.C	V1.8

Shanghai Xunyin Technology Co., Ltd（XY-TEK)
Address：Building 7, No.410 Jinggu Road, Minhang District, Shanghai, 200245，China
Tel：021-33885752 Mail：global@xy-tek.cn Website：www.xy-tek.com