



超聲波流量計

Ultrasonic Flow Meter

KLUFM Series

我們專注於流量量測技術的發展，產品主要用於量測管道內各類液體的流量，可實現生產過程中的即時流量監測，並提供數位與類比訊號輸出，參與製程中的計量與控制。主要應用於半導體、醫藥 / 醫療、化工製程、精細化工、清洗產業、飲料 / 食品...等領域。

We specialize in the development of flow measurement technologies.

Our products are designed to measure the flow of various liquids in pipelines, enabling real-time monitoring in production processes.

With both digital and analog signal outputs, the system supports process measurement and control.

Typical applications include semiconductor, medical/pharmaceutical, chemical processing, fine chemicals, cleaning systems, and food & beverage industries.



產品特色 Features

- ◆ 流量計卡在管子外面，不需要額外改動管路。

Clamp-on design allows installation directly on the pipe without modification.

- ◆ 不需要專業知識，根據選單選擇就能完成安裝和測量。

Easy setup via menu operation, no specialized knowledge required.

- ◆ 沒有可動部件，沒有壓力損失，不需停產即可安裝使用。

No moving parts, resulting in zero pressure loss and enabling installation without system downtime.

產品規格 Specifications

測量精度 Accuracy	±2.0%(0.3m/s ~ 5.0m/s)
流速範圍 Velocity	0.1 m/s ~ 5.0m/s
線性度 Linearity	±2.0%(0.3m/s ~ 5.0m/s)
重複性 Repeatability	0.8%
反應時間 Response time	500ms
螢幕顯示 Display	1.3 寸 128*64OLED 正反旋轉(方便讀數) 1.3" 128x64 OLED (rotatable display)
功能表語言 Language	英文 English



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顯示單位 Display unit	m ³ /h、LPM、GPM、LPH、Default m ³ /h
顯示資料 Display data	暫態流量、暫態流速、淨累積量、單次累積量、日月年累積量 Instant flow rate, velocity, net totalizer, batch totalizer, and cumulative totals (daily, monthly, yearly)
累積器 Totalizer	7 位流量累積器 7 bit digit
累積數據 Totalizer data	10 年 64 月 64 天 10 years 64 months 64 days
操作按鍵 Keypad	4 個輕觸按鍵 Four light touch buttons
電池 Battery	CR1220
電源配置 Power supply	24VDC@3W
模擬輸出 Output	4-20mA、最大負載 600Ω 4-20mA、max. load 600Ω
通訊介面 Communication	RS485 (Modbus RTU)
報警輸出 Alarm Output	OCT 上下限報警輸出、脈衝輸出等(選項) OCT high/low alarm, pulse output(optional)
適測介質 Fluid	水、溶液、化學試劑(雜質≤4%)等 Water, solvent, chemical reagent(impurity ≤ 4%)
防水等級 IP Grade	IP54/IP65
管徑規格 Pipe Size	OD9.53-OD220(DN6-DN200)
介質溫度 Medium Temp.	-10°C-50°
環境溫度 Env. Temp.	-10°C-50°C
環境濕度 Env. Humidity	相對濕度 0%-95%、無凝露 0-95% relative humidity, without condensation
適測粘度 Viscosity	<300CST(mm ² /s)
電纜長度 Cable Length	2 米 2meter

產業應用 Industrial application

產品投放市場以來，已於清洗設備產業中獲得廣泛應用。憑藉安裝簡便、操作直覺，以及穩定可靠的量測性能，逐步拓展至各類產業應用。主要應用產業包括半導體、食品、醫藥、飲料水、清潔用品、印染及化工...等領域。

在實際應用中，我們接觸到的介質種類遠超預期，類型多樣且具備不同黏度。透過現場測試與調整，客戶多能找到合適的量測方式，使產品應用範圍持續拓展。

Since its introduction to the market, the product has been widely adopted in the cleaning equipment industry.

With easy installation, intuitive operation, and reliable measurement performance, it has gradually expanded into various industrial applications.

Major industries include semiconductor, food processing, pharmaceutical, beverage water, cleaning products, textile dyeing, and chemical industries.

In practical applications, the variety of media encountered often exceeds expectations, covering a wide range of types with different viscosities.

Through on-site testing and adjustments, users are able to identify suitable measurement solutions, allowing the range of applications to continuously expand.



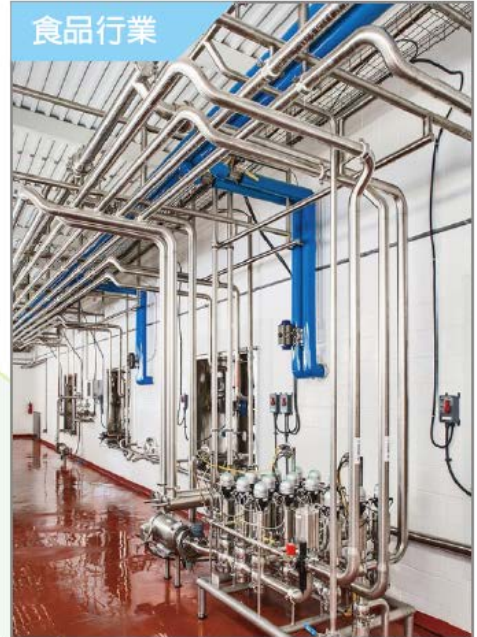
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半導體行業



食品行業



平板玻璃清洗



醫藥配比



飲料行業



精細化工

適用介質 Suitable Media

本產品適用於各類單一潔淨液體之流量量測，主要應用於水(自來水、純水、超純水)之計量與控制。隨著應用產業的拓展，亦廣泛應用於各類酸、鹼、有機液體、化學溶劑、酒精及飲用水等介質。

實際量測介質(客戶應用回饋):稀硫酸、白酒、碳氫化合物、酒精、氯酸鈉、碳酸鈉、三乙醇胺、乙二胺、環氧丙烷...等。

適用條件可參考以下幾點判斷: 1.介質於管道中流速穩定、2.系統壓力維持於約 3 Bar、3.流動過程中不產生氣泡或氣穴。

隨著市場應用持續拓展，可量測之介質種類亦不斷增加。若有特殊流體需求，歡迎與我們聯繫洽詢。

The product is suitable for flow measurement of a wide range of clean, single-phase liquids.

It is primarily used for the measurement and control of water, including tap water, purified water, and ultra-pure water. With the expansion of application fields, it has also been widely used for various acids, alkalis, organic liquids, chemical



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solvents, alcohols, and beverage liquids.

Verified Media (Based on Customer Applications): Diluted sulfuric acid, Alcoholic beverages, Hydrocarbons, Alcohol, Sodium chlorate, Sodium carbonate, Triethanolamine, Ethylenediamine, Propylene oxide... etc.

Suitable conditions can be evaluated based on the following:

1. Stable flow of the medium within the pipeline
2. System pressure maintained at approximately 3 Bar
3. No formation of bubbles or cavitation during flow

As applications continue to expand, the range of measurable media is also increasing. For special fluids or specific requirements, please feel free to contact us.

管道材料 Compatible Pipe Materials

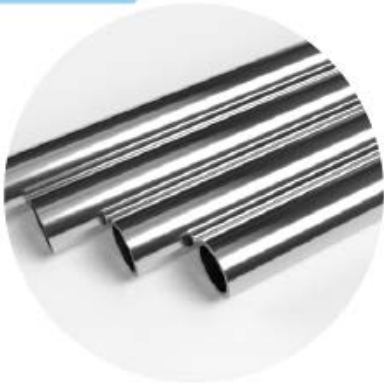
本產品可適用於多種具導聲特性的管道材質進行量測，包含金屬管與塑膠管皆可使用。

透過選單設定，一台流量計即可對應不同材質管道，同時支援金屬管與塑膠管之流量量測。

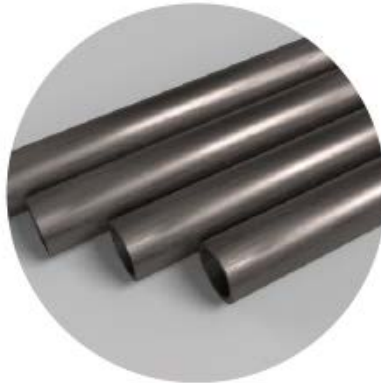
The product is compatible with a wide range of acoustically conductive pipe materials, including both metal and plastic pipes.

Through simple menu settings, a single flow meter can be configured to measure different pipe materials, supporting both metal and plastic pipe applications.

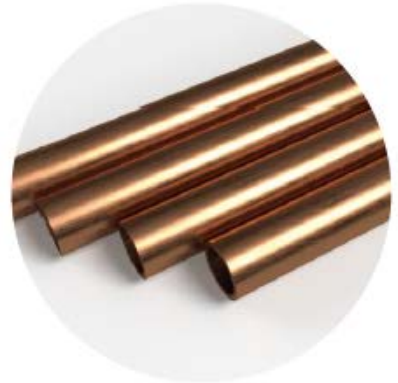
金屬管



不鏽鋼管



碳鋼管



銅管

塑料管



PVDF



PVC/CPVC



PPR



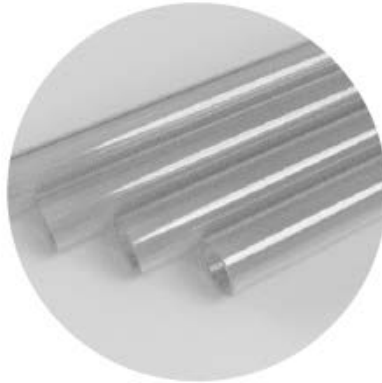
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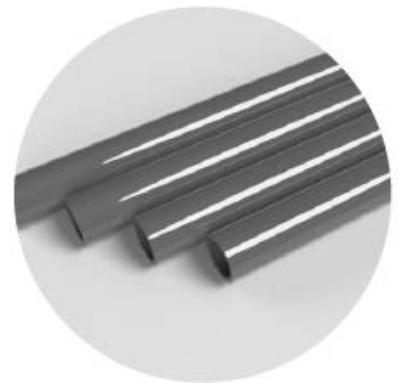
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PPH



PFA/PU



HDPE

流量範圍 Flow Rate Range

本產品適用於金屬管與塑膠管之流量量測。由於不同材質及管道標準會造成外徑差異，本產品在設計上已納入相關因素考量，可兼容不同範圍之管道外徑（最大與最小外徑）。訂購時請留意「最小外徑」與「最大外徑」規格，是否符合現場實際管徑需求。

The product is suitable for both metal and plastic pipe applications. Due to variations in pipe materials and standards, outer diameters may differ. These factors have been taken into account in the design, allowing compatibility with a wide range of pipe outer diameters (minimum to maximum).

Please ensure that the specified minimum and maximum outer diameter range matches the actual pipe dimensions at the installation site when placing an order.

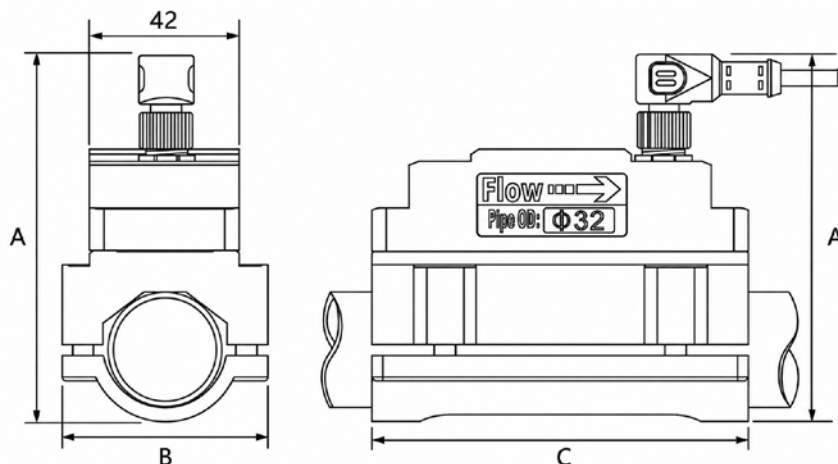
型號 Model	KLUFM-9	KLUFM-15	KLUFM-20	KLUFM-25
管外徑 O.D.	ϕ 9.53	ϕ 15	ϕ 20	ϕ 25
標稱管徑(公制)DN(Metric)	DN6	DN10	DN15	DN20
標稱管徑(英制)DN(Imperial)	1/8"	3/8"	1/2"	3/4"
外徑範圍 OD. Range	9.53-12.7	14-17	17-20	22-30
流量範圍 Flow Range	0.2-20	0.57-50	0.92-70	1.36-150

*以上為可測流量範圍 0.1m/s-5.0m/s，準確度流量範圍則以 0.3m/s-5.0m/s 為準。

The above values represent the measurable flow range (0.1–5.0 m/s).

The specified accuracy applies within the range of 0.3–5.0 m/s.

外觀尺寸 Overall Dimension





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型號 Model	標稱管徑(公制) DN(Metric)	標稱管徑(英制) DN(Imperial)	外徑範圍 OD. Range	A max. (mm)	B max. (mm)	C max. (mm)	重量 Weight (KG)
KLUFM-9	DN6	1/8"	9.53-12.7	100	58	106	0.89
KLUFM-15	DN10	3/8"	14-17	100	58	106	0.89
KLUFM-20	DN15	1/2"	17-20	106	58	106	0.89
KLUFM-25	DN20	3/4"	22-30	106	58	106	0.81



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安裝步驟 Installation Steps

01-清潔管道



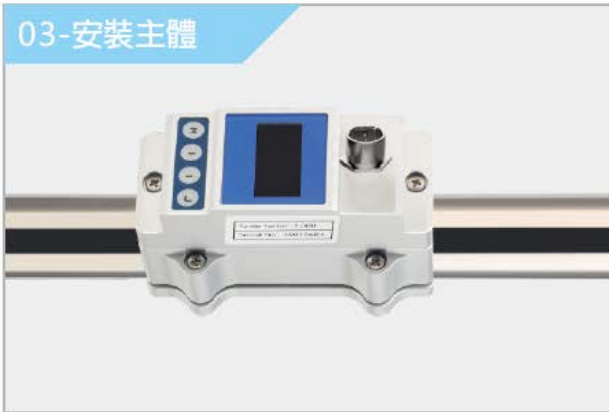
確認管道表面無污垢、油漆或其他雜質。

02-安裝上下卡



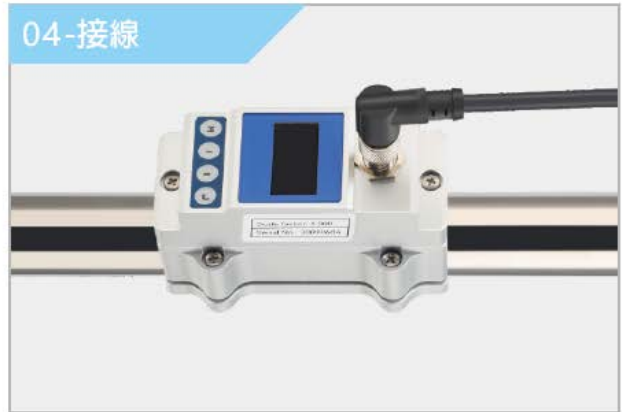
將下卡固定於安裝位置，使螺柱套入上卡，待上下卡自動吸附後，鎖緊四顆 M4 螺釘。

03-安裝主體



取下感測器保護膜，放入上卡內並鎖緊兩顆 M4 螺釘。

04-接線



連接輸出電纜，對接插頭並旋緊固定。

05-運行



將電纜另一端接上電源，通電後觀察，當 SQ 值穩定於 50 以上時，即表示量測已穩定。



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設置步驟 Setup Steps

產品於出廠前皆以標準管道進行標定，並以水作為測試介質，確保每一台產品在出廠時均達到標稱精度 ($\pm 2.0\%$)。

由於現場管道條件及介質可能與標準測試環境有所差異，建議首次安裝後進行數據確認，操作方式如下：

All products are calibrated using standard pipelines before shipment, with water as the test medium, ensuring that each unit meets the specified accuracy ($\pm 2.0\%$) before delivery.

Since actual installation conditions and media may differ from standard testing environments, it is recommended to verify measurement data after initial installation. The operation is as follows:

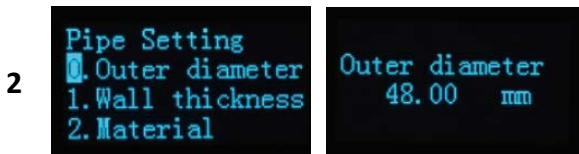
按鍵 Buttons

- **M** 鍵：切換設定與顯示模式；於設定模式下按 **M** 鍵可返回上一層選單。
M: Switch between display and setup modes; in setup mode, press **M** to return to the previous menu.
- **↑/↓**：上下切換顯示畫面。於設定模式下:按 **↓** 移動至下一位數，按 **↑** 選擇數值(0~9 循環)。
↑/↓: Scroll up and down through the display screens. In setup mode: Press **↓**: Move to the next digit, Press **↑**: Select values (0-9 loop).
- **↵**：確認設定。↵: Confirm the setting

操作設定 Operation & Setup



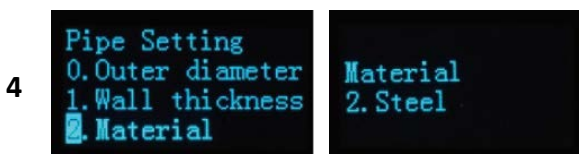
主介面按 **M**，進入 Setup menu (功能表設置)。



按 **↵** 進入 0.Pipe Setting (管道設置)。
按 **↵** 進入 0.Outer diameter (管外徑)。
按 **↓** 進行移位，按 **↑** 調整數值，按 **↵** 確認。



按 **M** 返回 0.Pipe Setting (管道設置)。
按 **↓** 和 **↵** 進入 1.Wall thickness (管道壁厚)。
按 **↓** 進行移位，按 **↑** 調整數值，按 **↵** 確認。



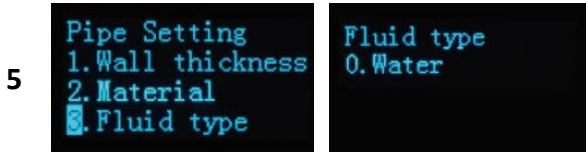
按 **M** 返回 0.Pipe Setting (管道設置)。
按 **↓** 和 **↵**，進入 2.Material (管道材質)。
按 **↵** 進行選擇，有 PVC、Steel... 等可選，按 **↵** 確認。



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按 \odot 返回 0.Pipe Setting (管道設置)。
按 \downarrow 和 \leftarrow ，進入 3.Fluid type (流體類型)。
按 \leftarrow 選擇，有 Water、Oil... 等可選，按 \rightarrow 確認。

零點校正 Zero Calibration



新產品使用前，建議先進行一次零點校正。校正時請確認管內已充滿介質且無氣泡，並將閥門關閉，使介質處於靜止狀態。

操作步驟如下：於主畫面按 \odot 鍵，進入 Setup Menu(設定選單)→選擇 2. Calibration (校正) →選擇 2. Set Zero(靜態零點)→連續按 \leftarrow 鍵 3 次完成零點校正→完成後系統將自動返回主畫面。校正完成後，開啟閥門即可進行正常流量量測。(註：若現場無法關閉閥門，可略過此步驟。)

安裝選點 Installation Location

請選擇一段始終充滿液體的管道，例如垂直向上流動或水平流動之管段。並確認量測位置的管道表面溫度在感測器允許範圍內。同時應了解管道內部狀況，建議選擇無明顯腐蝕或結垢之管段，以確保量測穩定性。

Select a section of the pipeline that is always filled with liquid, such as a vertically upward or horizontal flow section.

Ensure that the surface temperature at the measurement point is within the sensor's operating range.

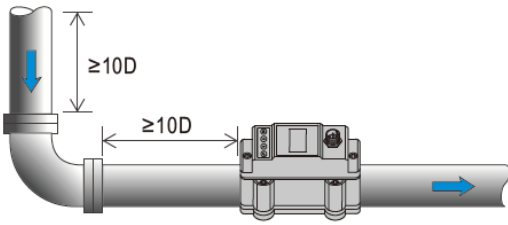
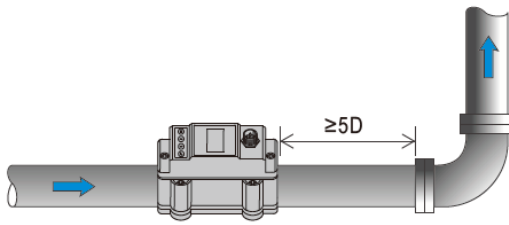
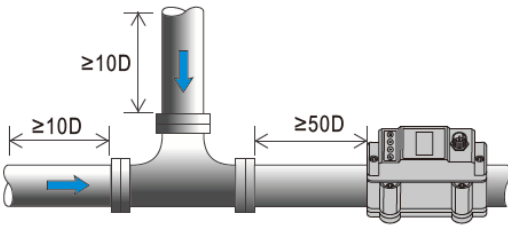
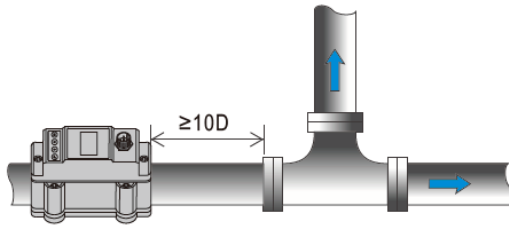
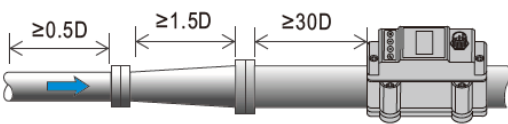
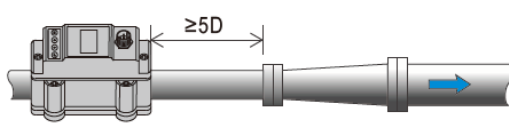
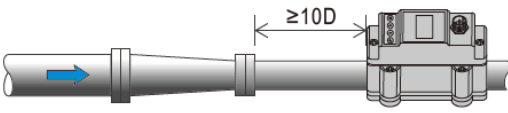
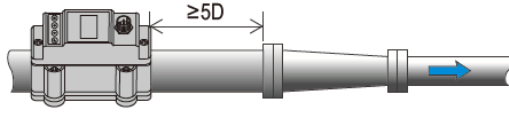


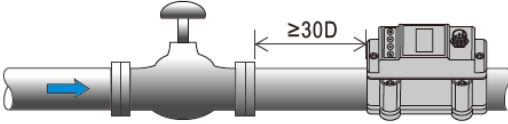
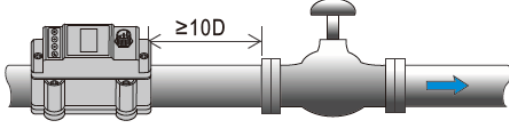
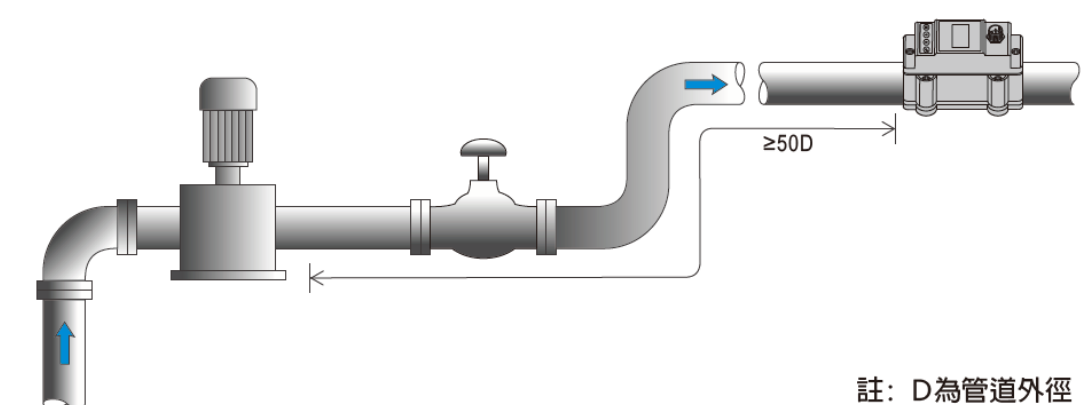
It is also recommended to consider the internal condition of the pipe and select a section without significant corrosion or scaling to ensure stable measurement performance.



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安裝點	安裝點前直管段	安裝點後直管段
彎頭		
三通		
擴大管		
縮徑管		
安裝點	安裝點前直管段	安裝點後直管段
彎頭		
閥門		
泵		

註：D為管道外徑