ICON PROCESS CONTROLS ProPulse 2 Series Mini Turbine Flow Meter User Guide

Contents

ICON PROCESS CONTROLS ProPulse 2 Series Mini Turbine Flow Meter

Specifications

- **Product:** Mini Turbine Flow Meter
- **Body Material:** PP | PFA
- **O-Ring:** FPM
- **Operating Temperature:** FPM
- **Max. Working Pressure | Non-Shock:**
  - PP: 142 psi | 10 bar
  - PVDF: 213 psi | 15 bar
  - PFA: 213 psi | 15 bar
- **Accuracy:** Not specified
- **Output Current:** Not specified
- **Operating Voltage:** Not specified
- **Protection Class:** Not specified
- **Display:** Not specified

Technical Specifications
The Mini Turbine Flow Meter features a body made of PP or PFA with FPM O-Rings. It can operate within specified temperature and pressure ranges. The product comes with various wiring options for different output configurations.

Product Usage Instructions

Safety Information

Warning | Caution | Danger
Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death
Note | Technical Notes
Highlights additional information or detailed procedure.
Do Not Use Tools
Use of tool(s) may damage product beyond repair and potentially void product warranty.
WARNING! Do Not Remove Under Pressure
Failure to follow these instructions may result in the sensor being ejected from the pipe! If leaking is observed from

the retaining cap, it indicates defective or worn o-rings on the sensor. Do not attempt to correct by further tightening.

1. De-pressurize and vent system prior to installation or removal
2. Confirm chemical compatibility before use
3. DO NOT exceed maximum temperature or pressure specifications
4. ALWAYS wear safety goggles or face-shield during installation and/or service
5. DO NOT alter product construction

Warning: Please ensure that the Instruments are not to be subject to water hammer or pressure spikes! Always Pressure Test System with H2O Prior to Initial Start-Up
Before Before installation be certain the appropriate instrument has been selected considering operating pressure, full scale pressure, wetted material requirements, media compatibility, operating temperature, vibration, pulsation, desired accuracy and any other instrument component related to the service application including the potential need for protective attachments and/or special installation requirements. Failure to do so could result in equipment damage, failure and/or personal injury. Ensure only qualified personnel personnel are permitted to install and maintain this instrument.
Pressurize System Warning
Sensor may be under pressure, take caution to vent system prior to installation or removal. Failure to do so may result in equipment damage and/or serious injury
Personal Protective Equipmet (PPE)
Always utilize the most appropriate PPE during installation and service of Truflo products.
Please Ensure Full Pipe
ProPulse2 Series can be installed in a horizontal or vertical direction. Please ensure enough length of straight pipe to avoid turbulence that can effect readings.

Installation

1. Ensure the system is de-pressurized and vented before starting
2. Confirm the compatibility of chemicals with the product.
3. Select the appropriate model based on your requirements.
4. Follow the wiring instructions for the desired output configuration.

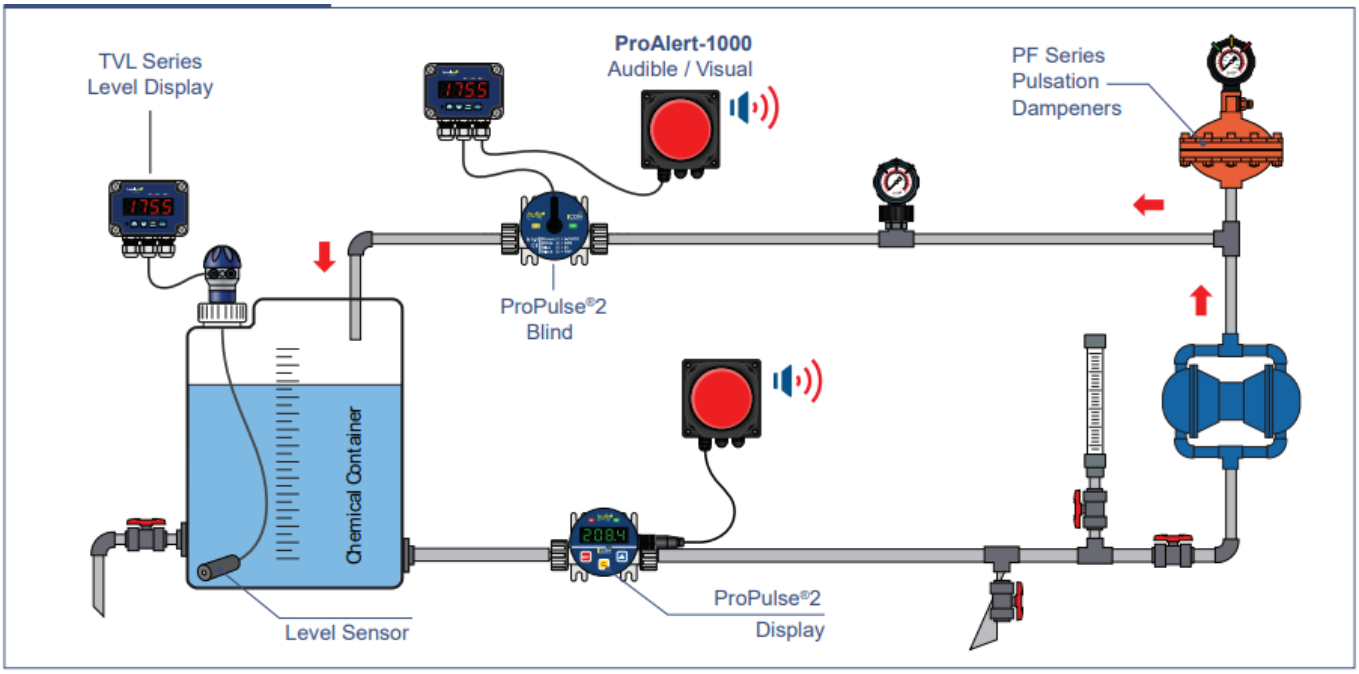
Maintenance

- Regularly check for leaks or worn o-rings.
- If leaking is observed, do not attempt to correct by further tightening.
- Always wear appropriate PPE during installation and service.

Product Description

The ProPulse2 Series provides superior performance and delivers accurate ultra-low flow measurement that is highly repeatable under the most demanding of industrial environments.
The ProPulse2 Series operates using a PP/PVDF rotor with encapsulated magnetic inserts, which rotate on a long-wearing set of zirconium ceramic bearings & rotor designed to provide years of reliability. As the rotor spins, the magnetic field produced by the magnets is picked up via a Hall Effect Sensor, which converts the rotation into a square wave NPN pulse, 4 – 20mA, IO-Link or RS485 output that can be sent directly to a metering pump, local display or PLC

Typical Application



Model Selection

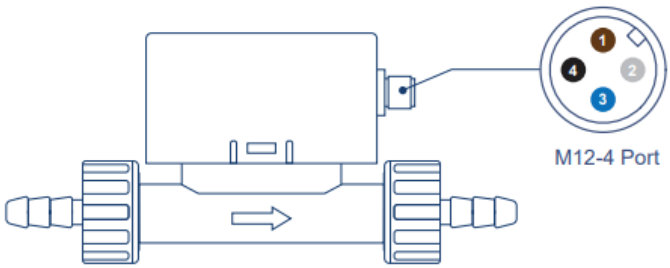
PP - M - 03H - PP

Output Option	Tube Type		Material
W : Blind with NPN Pulse | 4-20mA	**02N** : 1/8" NPT	**06T** : 3/8" Straight Tube	**PP** : PP
N : Blind with NPN | PNP	**03H** : 3/16" Hose Barb	**06H** : 3/8" Hose Barb	**PF** : PVDF
M : LED Display with 4-20mA | NPN	**04T** : 1/4" Straight Tube	**06F** : 3/8" Flared	**PA** : PFA
R : LED Display with RS485	**04F** : 1/4" Flared		
P : LED Display with NPN | PNP			

Technical Specifications

General	
Body Material	PP | | PFA
O-Ring	FPM
Environmental Conditions	-4ºF – 176°F | -20°C – 80°C (35% – 85% RH)
Operating Temperature	**PP** : -4ºF – 203°F | -20°C – 95°C **PVDF** : -40ºF – 250°F | -40°C – 120° C **PFA** : -40ºF – 250°F | -40°C – 120°C
Max. Working Pressure | Non-S hock	**PP** : 142 psi | 10 bar **PVDF** : 213 psi | 15 bar **PFA** : 213 psi | 15 bar
Accuracy	± . % of F.S. @ 25°C
Output Current	PPW, PPN (Blind) 50mA max | PPM | PPP | PPR (Display) 150mA max
Operating Voltage	5 – 30VDC (Blind) | 10-30VDC (Display)
Protection Class	NEMA 4X | IP65
Display	4 Digits : 0.0 – 9999 (PPM | PPP | PPR)

Wiring



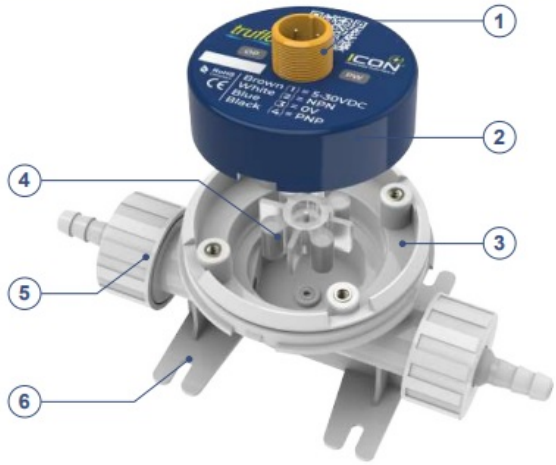
PPN - Blind (Pulse)			PPW- Blind (Pulse + 4-20mA)			PPP - Display (Pulse)			PPR - Display (RS485)			PPM - Display (Pulse + 4-20mA)		
Pin	Color	Function	Pin	Color	Function	Pin	Color	Function	Pin	Color	Function	Pin	Color	Function
1	Brown	+5-30VDC	1	Brown	+5-30VDC	1	Brown	+10-30VDC	1	Brown	+10-30VDC	1	Brown	+10-30VDC
2	White	NPN Output	2	White	NPN Output	2	White	NPN Output	2	White	RS+	2	White	NPN Output
3	Blue	-VDC	3	Blue	-VDC	3	Blue	-VDC	3	Blue	-VDC	3	Blue	-VDC
4	Black	PNP Output	4	Black	+mA Output	4	Black	PNP Output	4	Black	RS-	4	Black	+mA Output

Exploded View

1. M12 Quick Connection
2. Controller
3. Body

4. Turbine
5. True Union Design Integral
6. Mounting Platform

1. M12 Quick Connection
2. Controller
3. Body
4. Turbine
5. True Union Design
6. Integral Mounting Platform

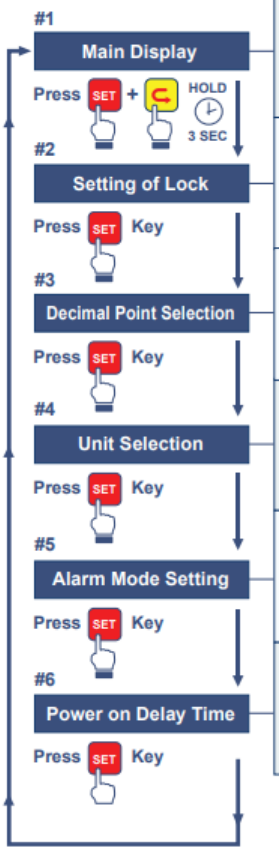


Display Functions

Setting Method
In Setting Status : The Settable Digit is Flicker

Key : To Change the Numerical Value
Key : To Shift the Digit
Key : To Enter into Setting Status or Load the Setting Value

Programming

Steps	Display	Range	Description
		0 ~ 9999	Current Value
		0 ~ 99	Lk = 10 : Settable
		0 ~ 3	dP.0 = Flow rate meter 0 ~ 9999 dP.1 = Flow rate meter 0.0 ~ 999.9 dP.2 = Flow rate meter 0.00 ~ 99.99 dP.3 = Flow rate meter 0.000 ~ 9.999
		L / KL / G / C	ut.L = LPM ut.KL = KLPM ut.G = GPM ut.C = cc/M
		0 ~ 4	Range : ALt.0 ~ ALt.4 *Refer to the Mode of Alarm
		0 ~ 99 s	t.00 = Delay time of Alarm Output (sec)

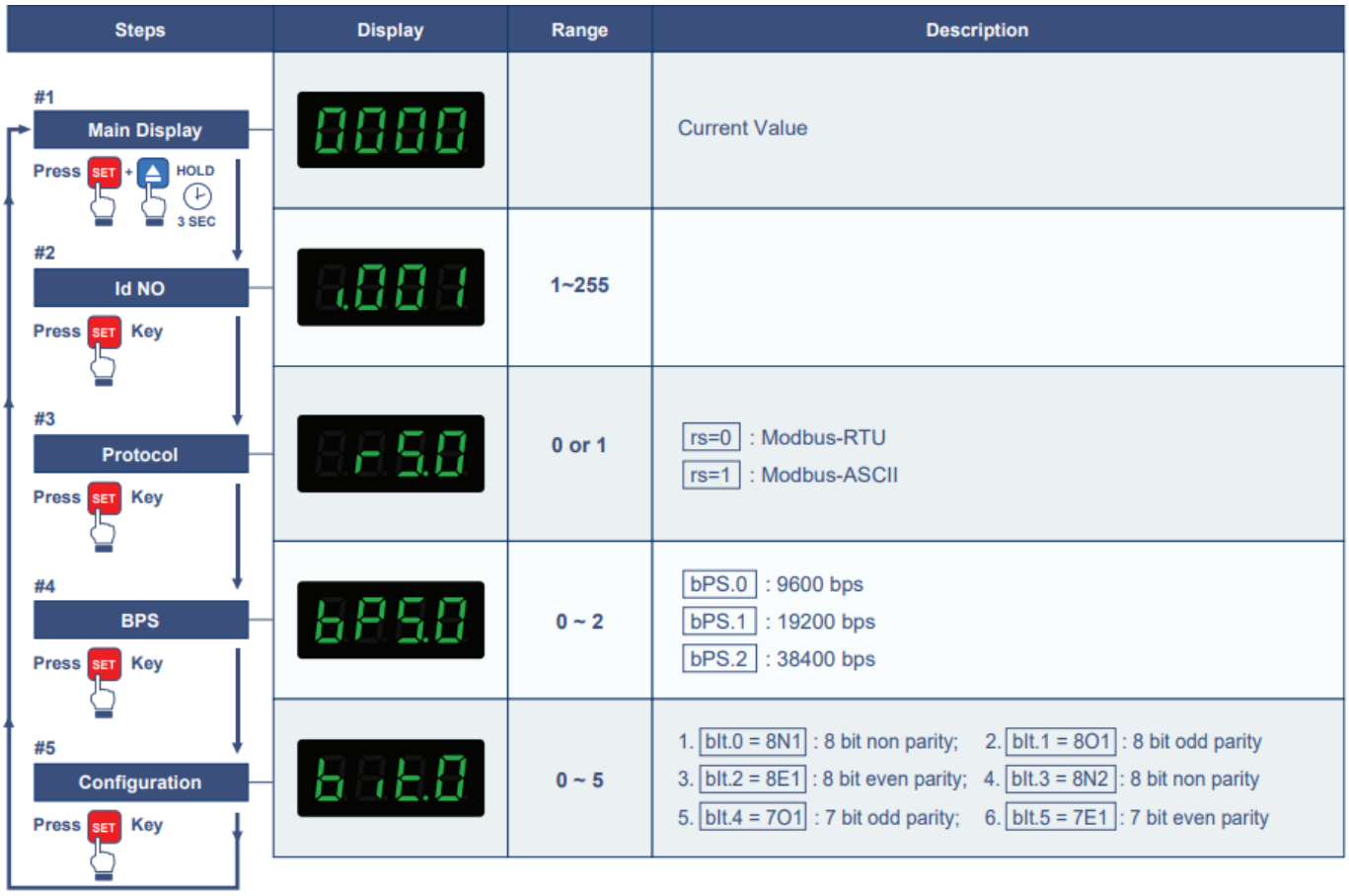
Mode of Alarm

ALt No.	Description
ALt = 0	Non alarm
ALt = 1	PV ≥ AL ⟶ Alarm ON ; PV < SV - Hys ⟶ Alarm OFF
ALt = 2	PV ≤ AL ⟶ Alarm ON ; PV > SV + Hys ⟶ Alarm OFF
ALt = 3	AL + Hys ≥ PV ≥ AL - Hys ⟶ Alarm ON ; PV > AL + Hys or PV < SV - Hys ⟶ Alarm OFF
ALt = 4	AL + Hys ≥ PV ≥ AL - Hys ⟶ Alarm OFF ; PV > AL + Hys or PV < SV - Hys ⟶ Alarm ON

K Factor | Alarm Programming (For 4-20mA Output Models)

K Factor | Alarm Programming (For Pulse Output Models)

Setting of RS485 Communication (For RS485 Output Models)



Parameter Address

Address	Parameter	Description	Address	Parameter	Description	Address	Parameter	Description
00H 01H	**CV**	Flow Rate Value	00H 05H	**HYS**	Alarm Hysteresis Setting	00H 09H	**ALt**	Alarm Mode Setting
00H 02H	**K.0**	K Factor Range Selection	00H 06H	**Lk**	Setting of Lock	00H 0AH	**t**	Alarm Delay Time
00H 03H	**K**	K Factor	00H 07H	**dP**	Decimal Point Selecting	00H 0BH	Output status*	
00H 04H	**AL**	Alarm Value Setting	00H 08H	**U t**	Unit Selecting	00H 0CH		

Output Status

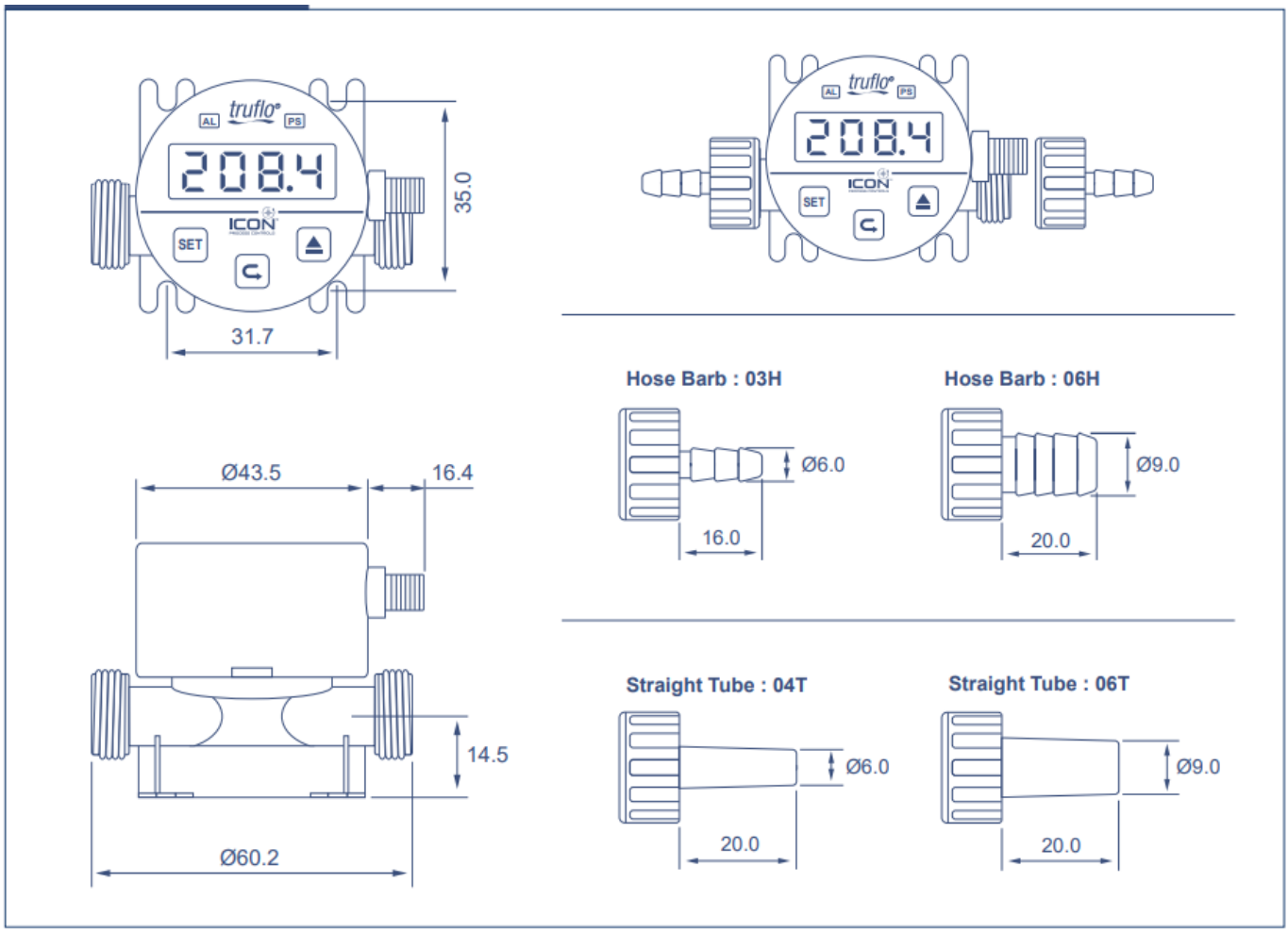
Data	Alarm	Data	Alarm
00H 00H	Off	00H 01H	On

Flow Range

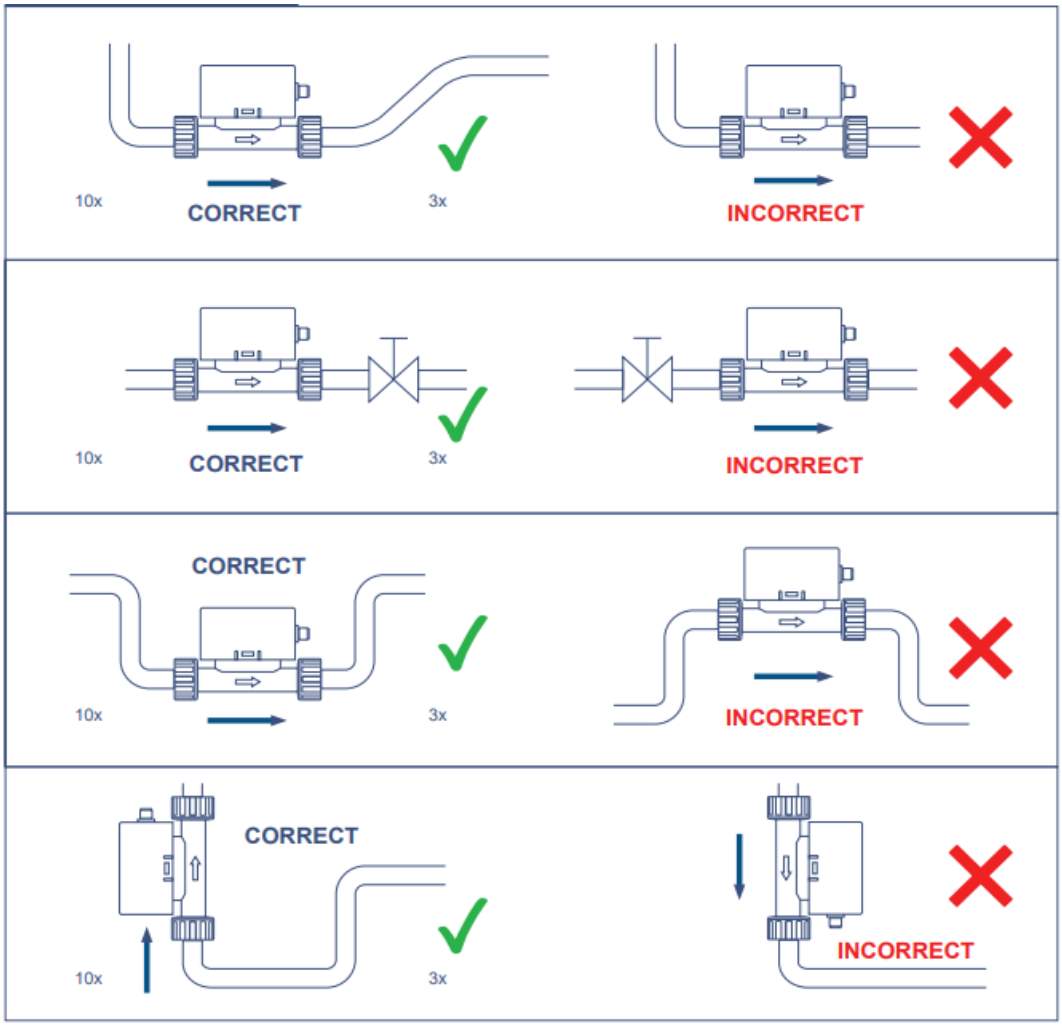
Connection		Flow Range (LPM)	Flow Range (GPM)	K Factor *(LPM/GPM)
02N	1/8″ NPT	0.12 ~ 16.20	0.032 ~ 4.280	5350
03H	3/16″ Hose Barb	0.04 ~ 2.20	0.010 ~ 0.581	5350
04T	¼” Straight Tube	0.12 ~ 8.20	0.032 ~ 2.166	1700
04F	¼” Flared	0.40 ~ 2.80	0.106 ~ 0.740	1700
06T	3/8″ Straight Tube	0.12 ~ 16.20	0.032 ~ 4.280	875
06H	3/8″ Hose Barb	0.12 ~ 16.20	0.032 ~ 4.280	875
06F	3/8″ Flared	0.40 ~ 9.80	0.106 ~ 2.589	875

Note : K factor can be modified to fit specific application

Dimensions (mm)



Installation Positions



1. Please make sure the measuring tube must be filled with the fluid under normal operation.
2. ProPulse2 Series can be installed at horizontal or vertical direction.
3. Please set enough length of straight pipe to avoid the vortex might be existed.
4. (The minimum straight upstream must be over 10 x DN and downstream must be observed over 3 x DN) Please adopt filtering device in the upstream to avoid the paddle wheel from be damaged by the solids or fibers. Please do not flush the pipe after the measuring unit being installed, if do that may crack the ceramic shaft.

Warranty, Returns & Limitations

Warranty

Icon Process Controls Ltd warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service in accordance with instructions furnished by Icon Process Controls Ltd for a period of one year from the date of sale of such products. Icon Process Controls Ltd obligation under this warranty is solely and exclusively limited to the repair or replacement, at Icon Process Controls Ltd option, of the products or components, which Icon Process Controls Ltd examination determines to its satisfaction to be defective in material or workmanship within the warranty period. Icon Process Controls Ltd must be notified pursuant to the instructions below of any claim under this warranty within thirty (30) days of any claimed lack of conformity of the product. Any product repaired under this warranty will be warranted only for the remainder of the original warranty period. Any product provided as a replacement under this warranty will be warranted for the one year from the date of replacement.

Returns

Products cannot be returned to Icon Process Controls without Icon's prior authorization. To return a product that is thought to be defective please submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to Icon Process Controls must be shipped prepaid and insured. Icon will not be responsible for any products lost or damaged in shipment.

Limitations

This warranty does not apply to products which:

1. Are beyond the warranty period or are products for which the original purchaser does not follow the warranty procedures outlined above;
2. Have been subjected to electrical, mechanical or chemical damage due to improper, accidental or negligent use;
3. Have been modified or altered;
4. anyone other than service personnel authorized by Icon Process Controls Ltd have attempted to repair;
5. have been involved in accidents or natural disasters;
6. Are damaged during return shipment to Icon Process Controls.

Icon Process Controls reserves the right to unilaterally waive this warranty and dispose of any product returned to Icon where :

1. There is evidence of a potentially hazardous material present with the product;
2. The product has remained unclaimed at Levelpro for more than 30 days after Icon Process Controls has dutifully requested disposition. This warranty contains the sole express warranty made by Icon Process Controls Ltd in connection with its products.

ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED. The remedies of repair or replacement as stated above are the exclusive remedies for the breach of this warranty. IN NO EVENT SHALL Icon Process Controls Ltd BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING PERSONAL OR REAL PROPERTY OR FOR INJURY TO ANY PERSON. THIS WARRANTY CONSTITUTES THE FINAL, COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY TERMS AND NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES OR REPRESENTATIONS ON BEHALF OF Icon Process Controls Ltd.

This warranty will be interpreted pursuant to the laws of the province of Ontario, Canada. If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty For additional product documentation and technical support visit **www.iconprocon.com** | e-mail: **sales@iconprocon.com** **support@iconprocon.com** | **Ph**: 905.469.9283

FAQ's

Q: What should I do if I observe leaking from the retaining cap?
A: Leaking indicates defective or worn o-rings. Do not attempt to correct by further tightening. Contact customer support for assistance.

Q: Can I alter the product construction?
A: No, do not alter the product construction as it may compromise its integrity and performance.

Documents / Resources

	ICON PROCESS CONTROLS ProPulse 2 Series Mini Turbine Flow Meter [pdf] User Guide ProPulse 2 Series Mini Turbine Flow Meter, ProPulse 2 Series, Mini Turbine Flow Meter, Turbine Flow Meter, Flow Meter

References

- User Manual