



Truflo TIM Series Multi Functional Paddle Wheel Flow Meter User Manual

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Truflo® — TIM Series

Truflo TIM Series Multi Functional Paddle Wheel Flow Meter



Specifications

- Operating Voltage
- Current Consumption
- Control Output
- Transmitter Communication
- Flow Rate GPM | LPM
- Fluid Accuracy
- Response Frequency
- Max Flow Rate
- Min Flow Rate
- Materials of Construction
- O-ring material
- Operating Temperature
- Protection Rating
- Approval *Optional

Product Information

The Multi-Function Paddle Wheel Flow Meter is designed to provide accurate and reliable flow measurements. It features a Zirconium Ceramic Rotor and Bushings for exceptional wear resistance and durability.

Safety Information

Before installation, ensure to de-pressurize and vent the system. Always confirm chemical compatibility and do not exceed maximum temperature or pressure specifications. Wear appropriate PPE during installation and service.

Installation Instructions

1. Lubricate O-rings with a compatible viscous lubricant before installation.
2. Carefully lower the sensor into the fitting using an alternating motion. Do not force.
3. Ensure tab and notch are parallel to flow direction.
4. Hand tighten the sensor cap without using any tools to avoid damage to threads.

Product Usage

Properly position the flow meter by following the alignment tab and fitting notch. Ensure the sensor is securely in place and parallel to the flow direction for accurate measurements.

FAQ

- **Q: What should I do if I encounter a pressurized system warning?**
 - A: Take caution to vent the system prior to installation or removal to avoid equipment damage or injury.
- **Q: Can I use tools during installation of the flow meter?**
 - A: Avoid using tools as it may cause irreparable damage to the product and void the warranty.

Truflo® — TIM Series
Multi-Function Paddle Wheel Flow Meter

Quick Start Manual

Read the user's manual carefully before starting to use the unit. Producer reserves the right to implement changes without prior notice.

Safety Information

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

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.



Hand Tighten Only

Over tightening may permanently damage product threads and lead to failure of the retaining nut.



Do Not Use Tools

Use of tool(s) may damage product beyond repair and potentially void product warranty.



Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Truflo products.



Pressurized 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.

General Information

General	Description
Operating Voltage	10 – 30VDC
Current Consumption	60mA max.
Control Output	NPN 150mA max.
Transmitter	4-20mA
Communication	RS485*
Flow Rate GPM LPM	0.0 – 999.9
Fluid	H2O Liquid Chemical Media
Accuracy	± 0.5% of F.S. @25°C
Response Frequency	5K Hz
Max Flow Rate	10m/s 33ft/s
Min Flow Rate	0.1m/s 0.3ft/s
Materials of Construction	Rotor: ETFE Tefzel® Rotor Pin: Zirconium Ceramic Rotor Bushings: Ceramic Sensor Body: PVC/PP/PVDF/316SS
O-ring material	FPM EPDM Optional FFKM Optional
Operating Temperature	PVC < 60°C PP < 80°C PF < 100°C
Protection Rating	NEMA 4X IP66 General Purpose
Approval	CE RoHS

Industry's Most Accurate & Reliable Paddle Wheel Flow Meters

The TI Series insertion plastic paddle wheel flow meter has been engineered to provide long-term accurate flow measurement in tough industrial applications.

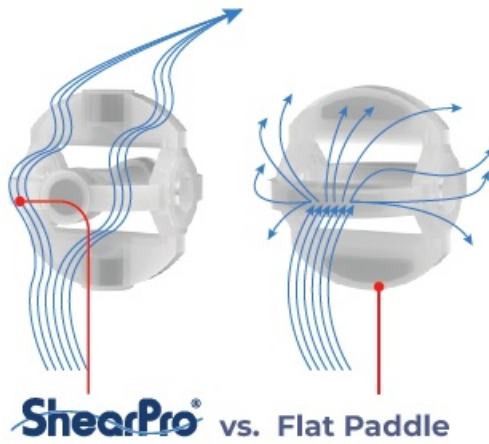
The paddle wheel assembly consists of a engineered Tefzel® paddle and micro-polished zirconium ceramic rotor pin and bushings.

High performance Tefzel® and Zirconium materials have been selected due to their excellent chemical and wear resistant properties.

- ½" – 24" Line Sizes
- Flow Rate | Total
- Pulse | 4 – 20mA | Voltage Outputs

New ShearPro® Design

- Contoured Flow Profile
- Reduced Turbulence = Increased Longevity
- 78% Less Drag than Old Flat Paddle Design* *Ref: NASA "Shape Effects on Drag"

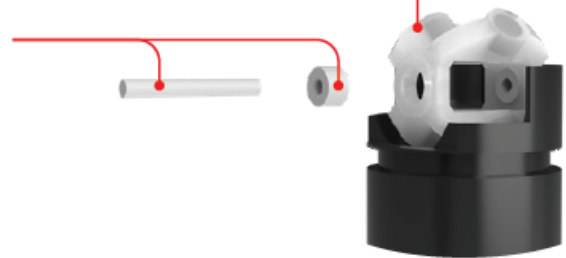


Tefzel® Paddle Wheel

- ✓ Superior Chemical And Wear Resistance vs PVDF

Zirconium Ceramic Rotor | Bushings

- ✓ Up to 15x the Wear Resistance
- ✓ Integral Rotor Bushings Reduce Wear and Fatigue Stress



360° Shielded Rotor Design

- Eliminates Finger Spread
- No Lost Paddles



Installation

Very Important

- Lubricate O-rings with a viscous lubricant, compatible with the materials of construction.
- Using an alternating | twisting motion, carefully lower the sensor into the fitting. | Do Not Force | Fig 5
- Ensure tab | notch are parallel to flow direction | Fig-2

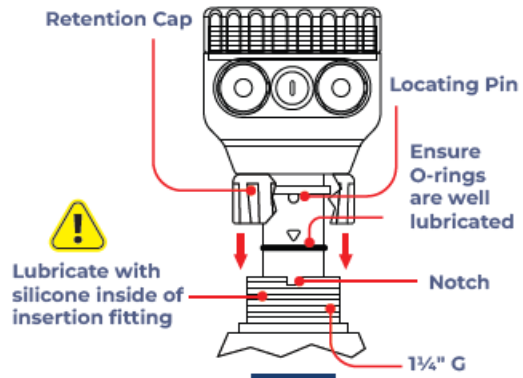


Fig - 3

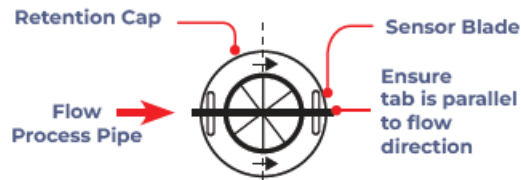


Fig - 4

Top View



Fig - 5

Hand tighten the sensor cap. DO NOT use any tools on the sensor cap or the cap threads or fitting threads may be damaged. | Fig-5

Fig - 1

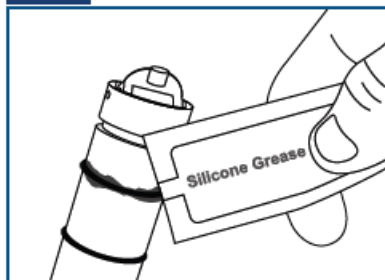
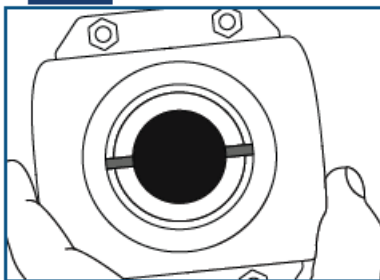
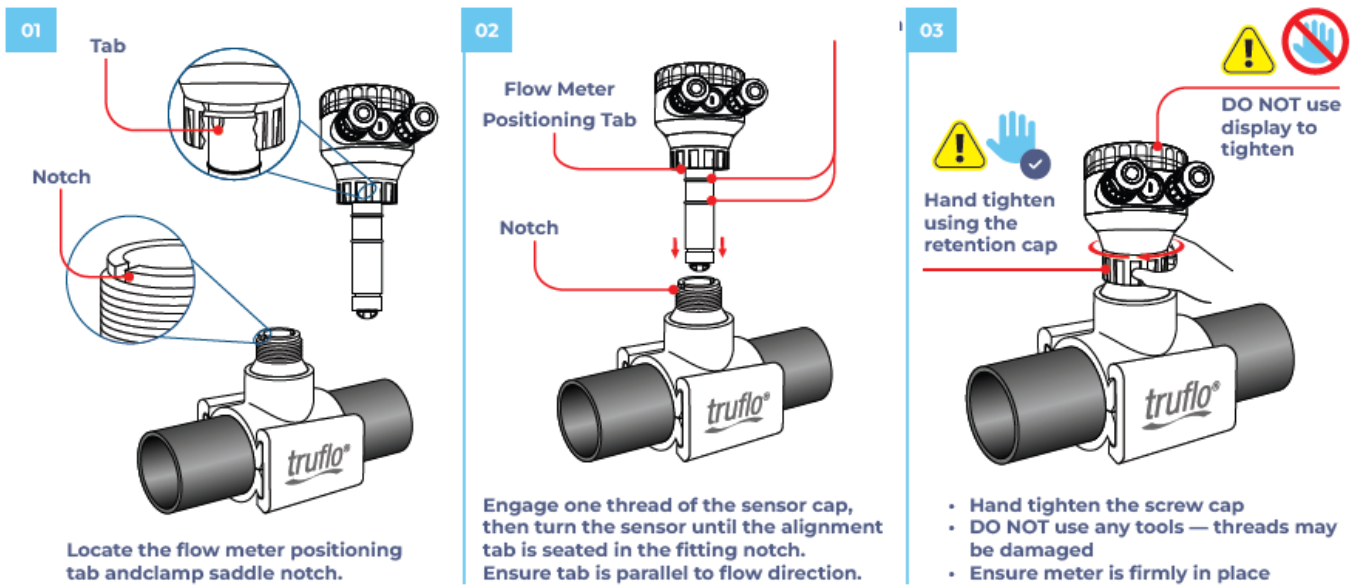


Fig - 2

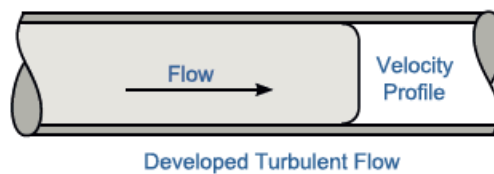


Correct Sensor Position

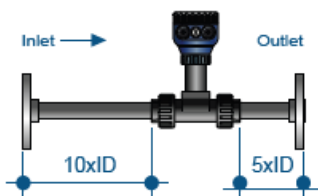


Correct Sensor Position Setup

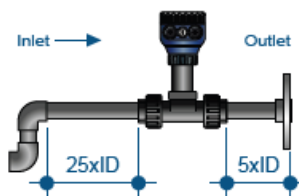
TI Series flow meters measure liquid media only. There should be no air bubbles and the pipe must always remain full. To ensure accurate flow measurement, the placement of the flow meters needs to adhere to specific parameters. This requires a straight run pipe with a minimum number of pipe diameters distance upstream and downstream of the flow sensor.



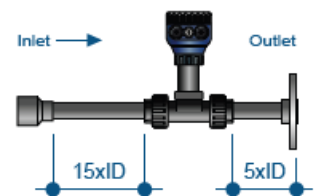
Flange



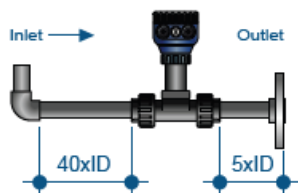
2x 90° Elbow



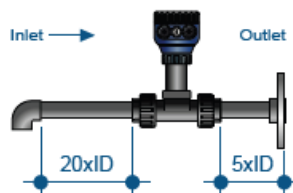
Reducer



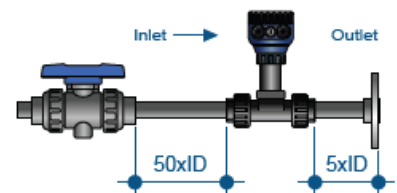
90° Downward Flow



90° Elbow Downward Flow Upward

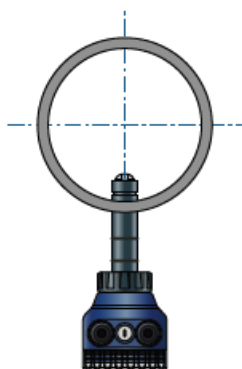


Ball Valve



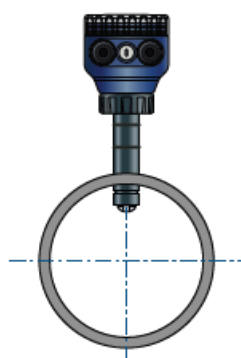
Installation Positions

Figure - 1



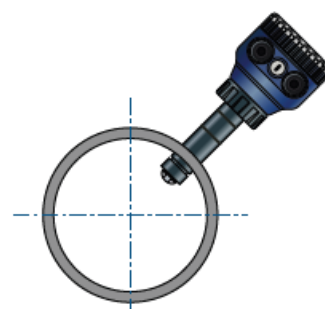
Good if NO SEDIMENT present

Figure - 2



Good if NO AIR BUBBLES present

Figure - 3




Preferred installation if
SEDIMENT* or AIR BUBBLES
may be present

*Maximum % of solids: 10% with particle size not exceeding 0.5mm cross section or length

Terminal Connections


Terminal Connections

 **SimpliConnect**
Cable Grip Connectors

**Cable Grip Wire
Connector Combo**
(no Internal wiring required)

Cable Grip Connection

Terminal	Description
1	+ 10-30VDC
2	OUT 2 (NPN)
3	- VDC
4	OUT 1 (NPN)
5	4-20mA -
6	4-20mA +



M12 Connection (no Internal wiring required)

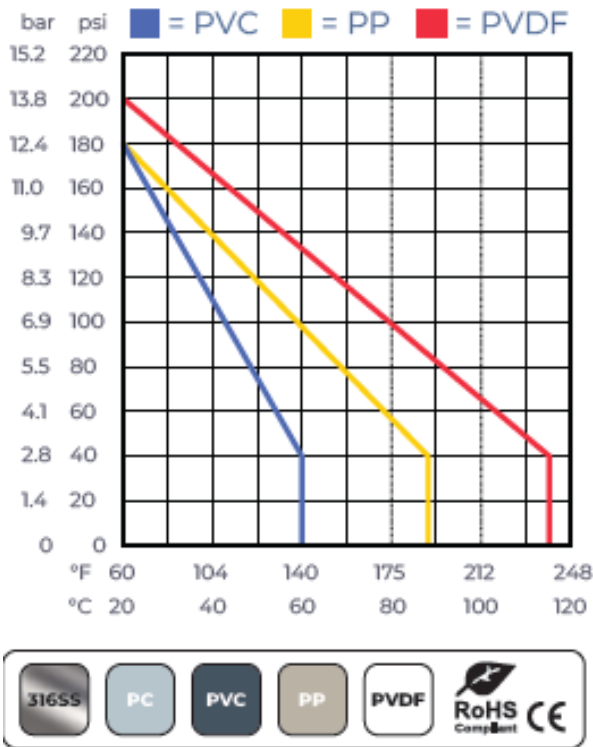
Terminal	Description	Color
1	+ 10-30 VDC	Brown
2	Totalizer Pulse Output NPN	White
3	– VDC	Blue
4	Flow Rate Pulse Output NPN	Black
5	4-20mA +	Yellow
6	4-20mA –	Grey

Fittings and K-Factor

TEE FITTINGS					CLAMP-ON SADDLES					CPVC SOCKET WELD-ON ADAPTERS				
														
Tee Fitting		K-Factor		Sensor Length	Clamp Saddles		K-Factor		Sensor Length	Weld On Adapter		K-Factor		Sensor Length
IN	DN	LPM	GPM		IN	DN	LPM	GPM		IN	DN	LPM	GPM	
½" (V1)	20	156.1	593.0	S	2"	50	21.6	81.7	S	2"	50	14.4	54.4	S
½" (V2)	25	267.6	1013.0	S	3"	80	9.3	35.0	S	2½"	65	9.3	35.5	S
¾"	20	160.0	604.0	S	4"	100	5.2	19.8	S	3"	80	9.3	35.0	S
1"	25	108.0	408.0	S	6"	150	2.4	9.2	L	4"	100	5.2	19.8	S
1½"	40	37.0	140.0	S	8"	200	1.4	5.2	L	6"	150	2.4	9.2	L
2"	50	21.6	81.7	L						8"	200	1.4	5.2	L
2½"	65	14.4	54.4	L						10"	250	0.91	3.4	L
3"	80	9.3	35.0	L						12"	300	0.65	2.5	L
4"	100	5.2	19.8	L						14"	400	0.5	1.8	L
										16"	500	0.4	1.4	L
										18"	600	0.3	1.1	L
										20"	800	0.23	0.9	L
										24"	1000	0.16	0.6	L

Pressure vs. Temperature

Note: During system design the specifications of all components must be considered. | Non-Shock



Min/Max Flow Rates

Pipe Size (O.D.)	LPM GPM	LPM GPM
	0.3m/s min.	10m/s max
½" DN15	3.5 1.0	120.0 32.0
¾" DN20	5.0 1.5	170.0 45.0
1" DN25	9.0 2.5	300.0 79.0
1 ½" DN40	25.0 6.5	850.0 225.0
2" DN50	40.0 10.5	1350.0 357.0
2 ½" DN60	60.0 16.0	1850.0 357.0
3" DN80	90.0 24.0	2800.0 739.0
4" DN100	125.0 33.0	4350.0 1149.0
6" DN150	230.0 60.0	7590.0 1997.0
8" DN200	315.0 82.0	10395.0 2735.0



Select/Save/Continue



Move selection left














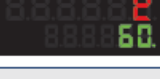




Change digit value










Change digit value

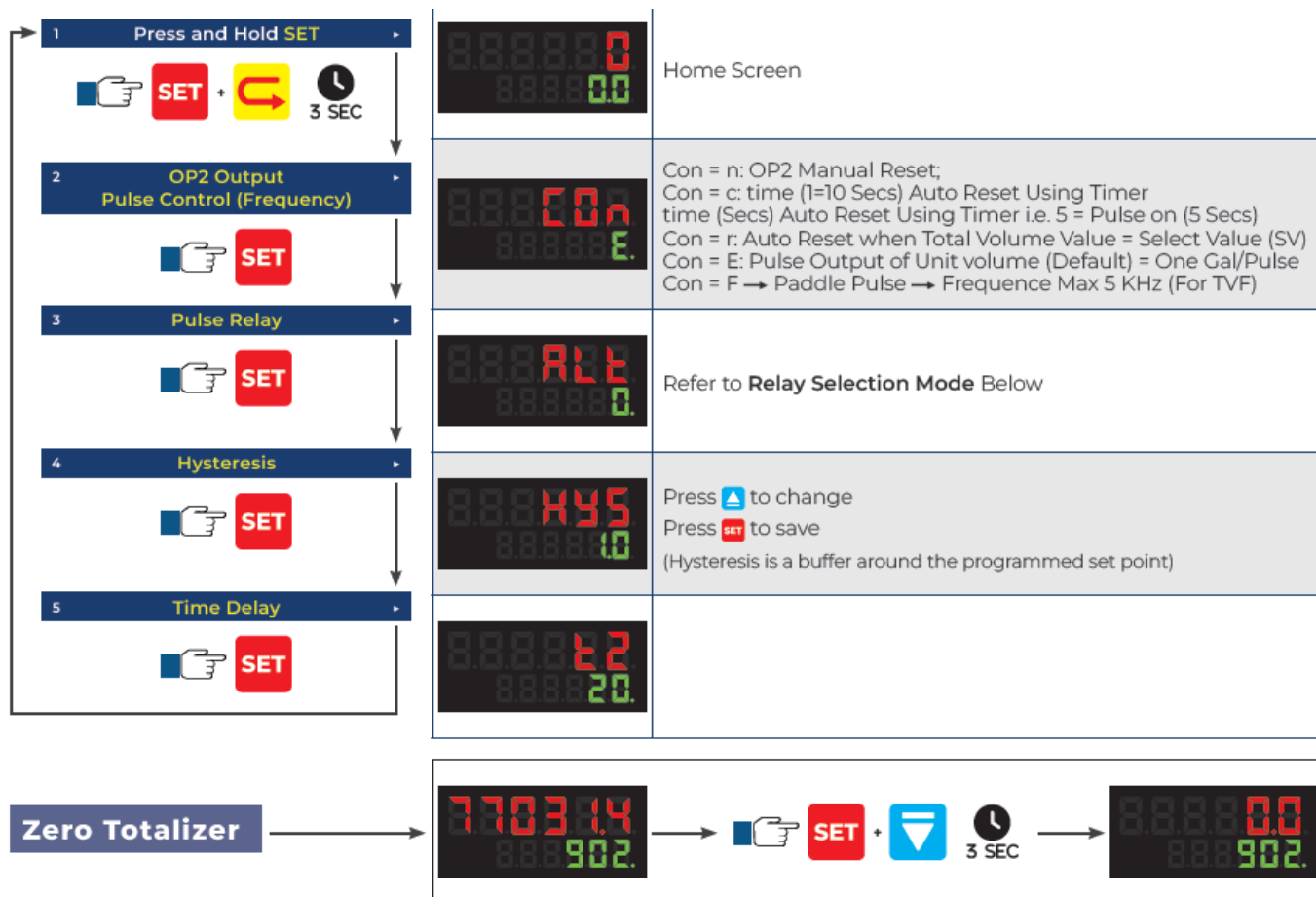
Programming

STEPS	DISPLAY	OPERATION
1 Press and Hold SET  SET +  3 SEC		Home Screen
2 Password  SET		Factory Default: Lk = 10 Otherwise meter will enter Lockout Mode* Press  /  to change Press SET to save
3 Units of Flow  SET		Ut.G = Gallons (Factory default) Ut.L = Liters Ut.KL = Kiloliters Press  to change Press SET to save
4 Filter Damping  SET		Enter Damping Time: 01 – 15 Seconds
5 K Factor  SET		Enter K Factor Value Refer to Page 6 for K-Factor Values
5 Transmitter Range  SET		Factory Default — 4mA = 0, 20mA = 100** **This can be change to suit application

Programming Frequency Pulse Relay Output

STEPS	DISPLAY	OPERATION
1 Press and Hold SET  SET +  3 SEC		Home Screen
2 Flow Rate Pulse Output  SET		CV - Program Value of (Flow Rate) Pulse (NPN) Output Preset Value of Flow Rate Change to a Value that meets your Flow Rate Pulse Output SV - CV > SV ► Flow Rate Pulse Output ON CV < SV ► Flow Rate Pulse Output OFF
3 Flow Total Pulse Output  SET		CV - Program Value of Flow Totalizer Pulse (NPN) Output SV: Preset Value of Flow Total SV - CV > SV ► Flow Rate Pulse Output ON 2000 Default can be changed to desired value. Refer to "Programming OP2 Output" for totalizer options Flow Totalizer Pulse - (Step #2 - Next)

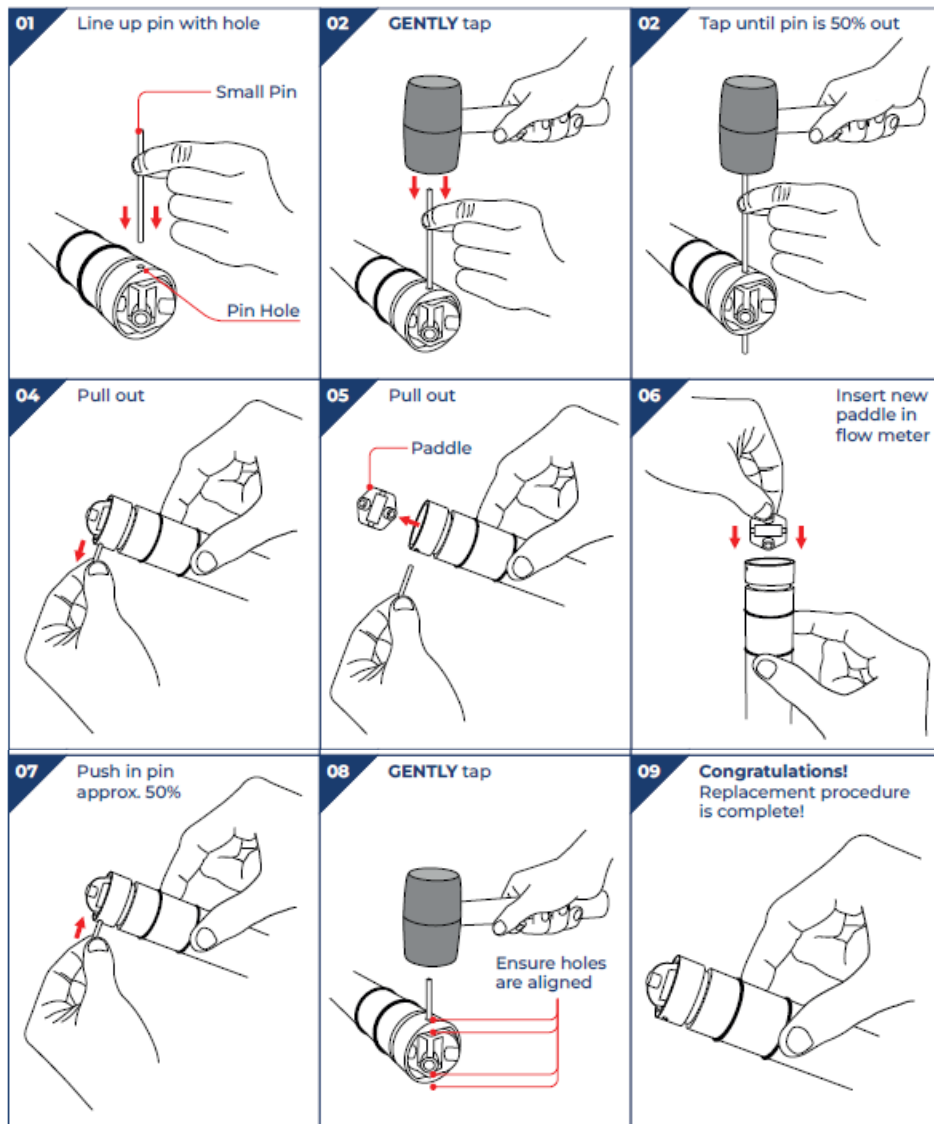
Programming Relay Output



Relay Option Outputs

ALt No.	Description
ALt = 0	CV > SV → ON: CV < SV – Hys → OFF ‘Normally Closed Relay’
ALt = 1	CV < SV → ON: CV > SV + Hys → OFF ‘Normally Open Relay’
ALt = 2	SV + Hys > CV > SV – Hys → ON: CV > SV + Hys or CV < SV – HyS → OFF
ALt = 3	SV + Hys > CV > SV – Hys → OFF: CV > SV + Hys or CV < SV – HyS → ON
Hys = Hysteresis — Acts like a buffer ± around pulse output (measured in GPM)	
CV: Current Value = Flow Rate SV = Selected or Programmed Value	

Rotor Pin | Paddle Replacement



Warranty, Returns and 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 Ltd without prior authorization. To return a product that is thought to be defective, go to www.iconprocon.com, and submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to Icon Process Controls Ltd must be shipped prepaid and insured. Icon Process Controls Ltd 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; or
6) are damaged during return shipment to Icon Process Controls Ltd reserves the right to unilaterally waive this warranty and dispose of any product returned to Icon Process Controls Ltd where: 1) there is evidence of a potentially hazardous material present with the product; or 2) the product has remained unclaimed at Icon Process Controls Ltd for more than 30 days after Icon Process Controls Ltd 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

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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 or support@iconprocon.com | Ph: 905.469.9283


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Phone: 905.469.9283

- Sales: sales@iconprocon.com
- Support: support@iconprocon.com

Documents / Resources

	<p>TruFlo TIM Series Multi Functional Paddle Wheel Flow Meter [pdf] User Manual TIM Series Multi Functional Paddle Wheel Flow Meter, TIM Series, TIM Series Paddle Wheel Flow Meter, Multi Functional Paddle Wheel Flow Meter, Paddle Wheel Flow Meter, Paddle Wheel Meter, Flow Meter, Meter</p>
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References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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