


ICON
PROCESS CONTROLS
**In-Line Paddle
Wheel Flow Meter**



ICON PROCESS CONTROLS In-Line Paddle Wheel Flow Meter User Guide

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ICON PROCESS CONTROLS In-Line Paddle Wheel Flow Meter



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 the system before 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.



Personal Protective Equipment (PPE)

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



Pressurized System Warning

The sensor may be under pressure. Take caution to vent the system before installation or removal. Failure to do so may result in equipment damage and/or serious injury.

WARNING

Please ensure that the Instruments are not to be subject to water hammer or pressure spikes! Always Pressure the Test System with H2O Before the Initial Start-Up 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.

Pressurize System Warning

The sensor may be under pressure, take caution to vent the system before installation or removal. Failure to do so may result in equipment damage and/or serious injury.

Please Ensure Full Pipe

TK Series can be installed in a horizontal or vertical direction. Please ensure enough length of straight pipe to avoid turbulence that can affect readings.

Min 10x Pipe Diameters Upstream 3x Pipe Diameters Downstream

A Bag Filter or Y Strainer Filtering Device upstream to Avoid the Paddle Wheel from being damaged by the solids or fibers – max 10% Particle Size – Not to Exceed .5mm Cross Section or Length. Please do not flush the pipe after the Flow Meter is installed with compressed air this may damage the ceramic shaft and will void the warranty. industry's Most Accurate & Reliable Paddle Wheel Flow Meters

The TK 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 an 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.

New ShearPro® Design



Tefzel® Paddle Wheel

- ✓ Superior Chemical And Wear Resistance vs PVDF

Zirconium Ceramic Rotor | Bushings

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

ShearPro® Through-Pin Design

- ✓ Eliminates Finger Spread
- ✓ No Lost Paddles
- ✓ Increased Temp. Rating
- ✓ 360° Housing Protects Rotor



Contoured Flow Profile

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

ShearPro® Through-Pin Design

- Eliminates Finger Spread
- No Lost Paddles
- Increased Temp. Rating
- 360° Housing Protects Rotor

Technical Specifications

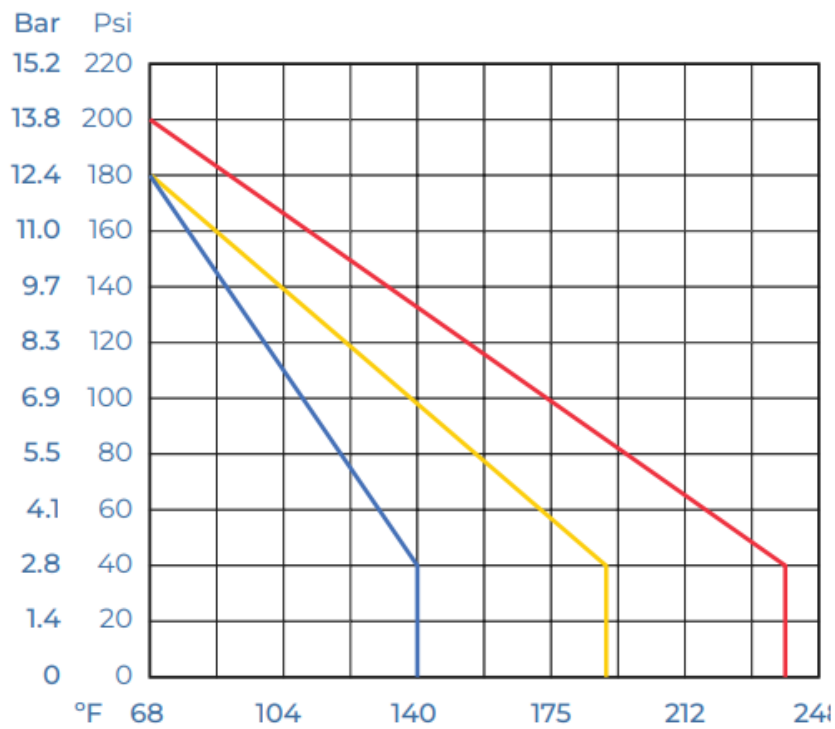
General		
Operating Range	0.3 to 33 ft/s	0.1 to 10 m/s
Pipe Size Range	1/4" to 4"	DN08 to DN100
Linearity	±0.5% of F.S @ 25°C 77°F	
Repeatability	±0.5% of F.S @ 25°C 77°F	
Wetted Materials		
Sensor Body	PVC (Dark) PP (Pigmented) PVDF (Natural) 316SS	
O-Rings	FKM EPDM* FFKM*	
Rotor Pin Bushings	Zirconium Ceramic ZrO2	
Paddle Rotor	ETFE Tefzel®	
Electrical		
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal
Supply Voltage	9 to 30 VDC ±10% regulated	
Supply Current	<1.5 mA @ 3.3 to 6 VDC	<20 mA @ 6 to 24 VDC
Max. Temperature/Pressure Rating – Standard and Integral Sensor Non-Shock		
PVC	180 psi @ 68°F 40 psi @ 140°F	12.5 bar @ 20°C 2.7 bar @ 60°C
PP	180 psi @ 68°F 40 psi @ 190°F	12.5 bar @ 20°C 2.7 bar @ 88°C
PVDF	200 psi @ 68°F 40 psi @ 240°F	14 bar @ 20°C 2.7 bar @ 115°C
316 SS	Consult Factory	
Operating Temperature		
PVC	32°F to 140°F	0°C to 60°C
PP	-4°F to 190°F	-20°C to 88°C
PVDF	-40°F to 240°F	-40°C to 115°C
316 SS	-40°F to 300°F	-40°C to 100°C
Outputs		
TKW Series	NPN Pulse Voltage 4-20mA Outputs	
Standards and Approvals		
CE FCC RoHS Compliant		

See Temperature and Pressure Graphs for more information.

Pressure Graphs

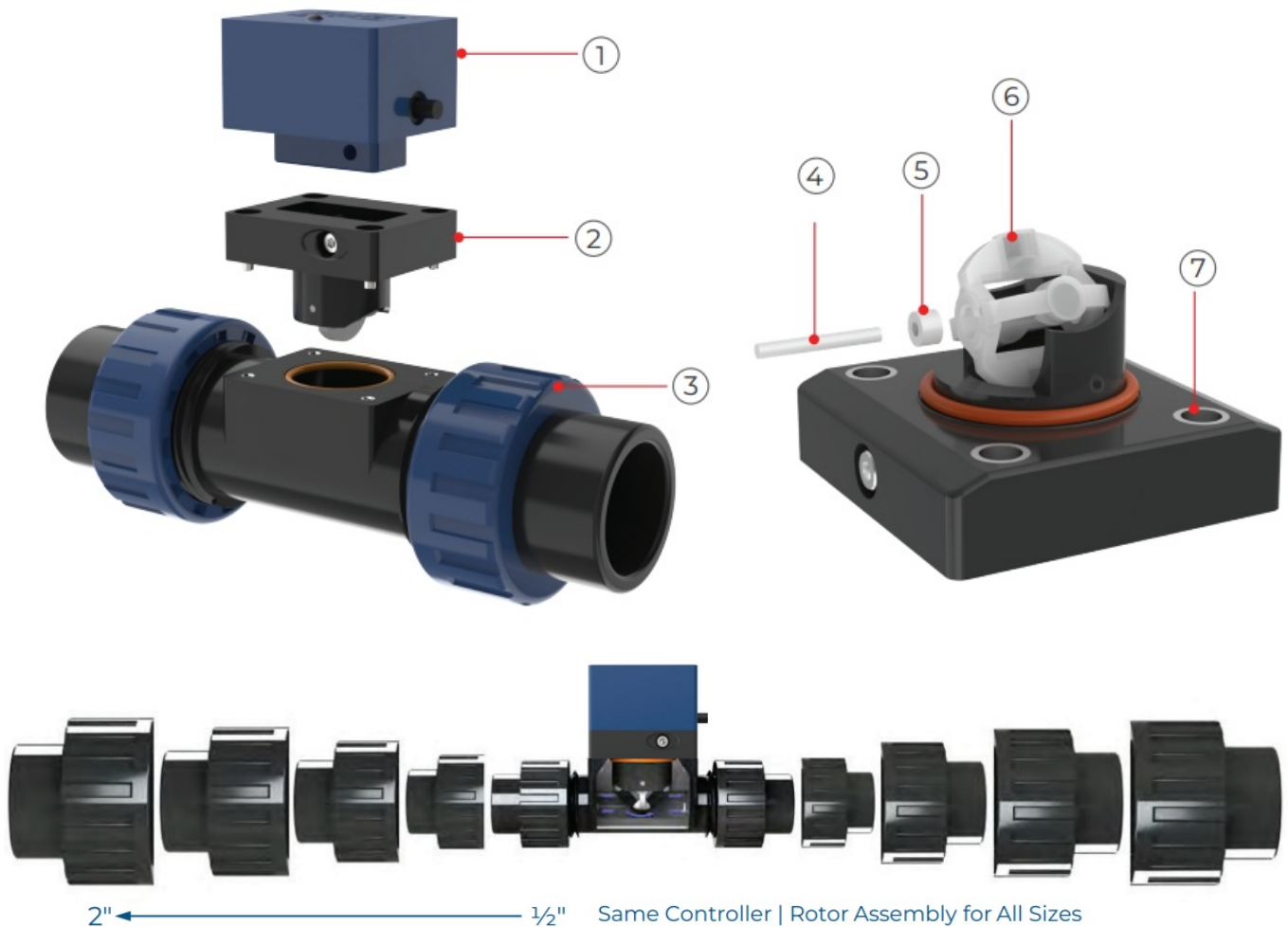
Temperature | Pressure Graphs | Non-Shock

■ = PVC ■ = PP ■ = PVDF



Note: The Pressure/Temperature graphs are specifically for the Truflo® Flow Meter Sensors. During system design the specifications of all components must be considered.

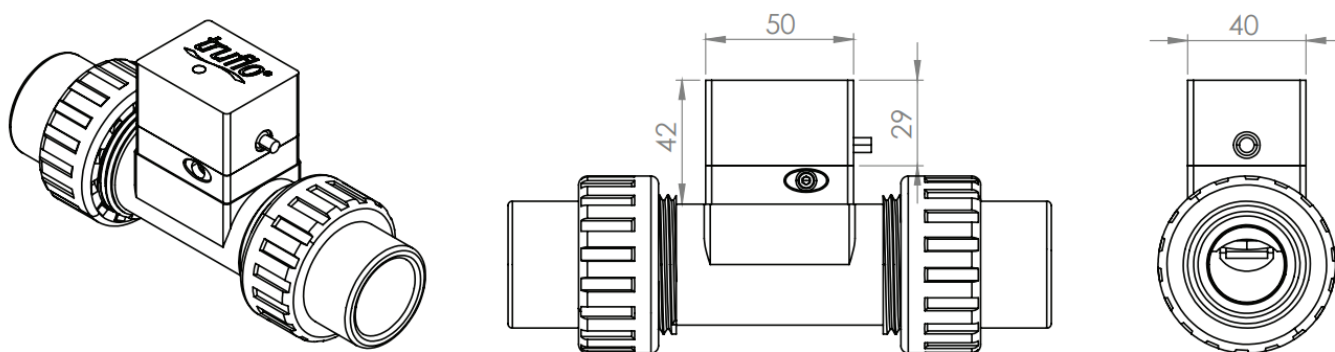
Exploded View



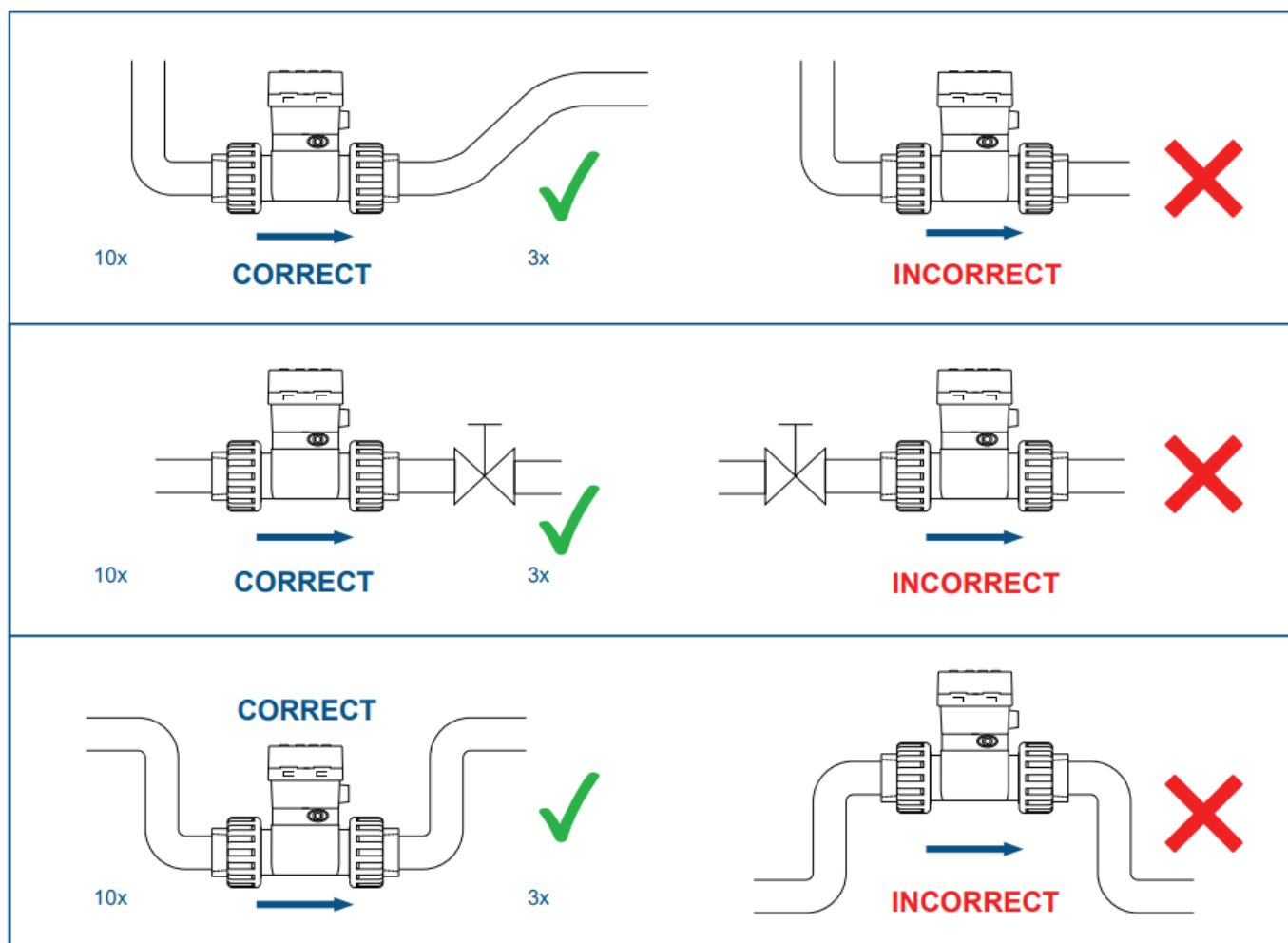
2" ← 1/2" Same Controller | Rotor Assembly for All Sizes

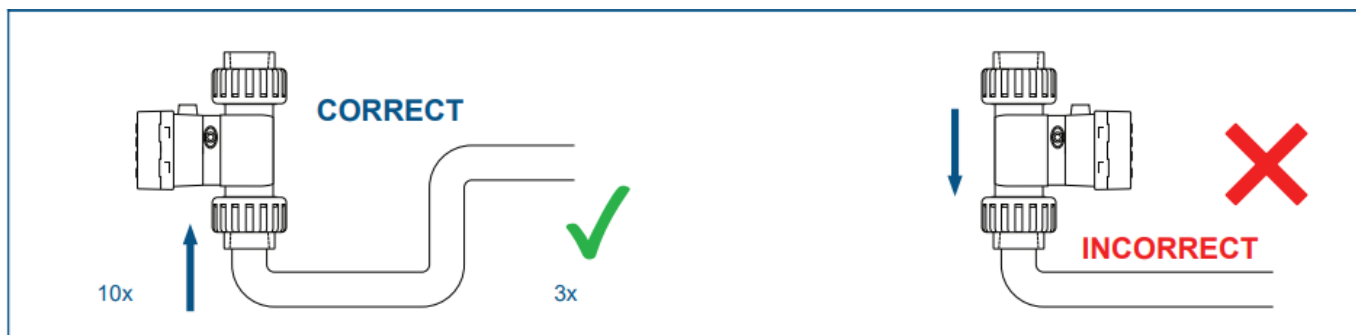
1. Flow Controller
2. Rotor Assembly
3. Body – PVC | PP | PVDF
4. Rotor Pin
5. Rotor Bushing
6. ShearPro® Paddle Wheel
7. Reinforced Inserts

Dimensions



Installation Position





Please Ensure Full Pipe

TK Series can be installed in a horizontal or vertical direction. Please ensure enough length of straight pipe to avoid turbulence that can affect readings.

Note: Min 10x Pipe Diameters Upstream and 3x Pipe Diameters Downstream. A Plastic Basket Strainer, Bag Filter, or Y Strainer Filtering Device upstream to Avoid the Paddle Wheel from being damaged by the solids or fibers – max 10% Particle Size – Not to Exceed .5mm Cross Section or Length. Please do not flush the pipe after the Flow Meter is installed with Compressed Air this may damage the ceramic shaft and will Void Warranty.

Min/Max Flow Rates

Pipe Size (O.D.)	LPM GPM	LPM GPM
	0.3m/s min.	10m/s max.
DN08 (1/4") SS Only	0.04 0.16	12 3
DN10 (3/8") SS Only	1.0 3.8	50 13
DN15 (1/2")	3.5 1.0	120 32
DN20 (3/4")	5.0 1.5	170 45
DN25 (1")	9.0 2.5	300 79
DN40 (1 1/2")	25.0 6.5	850 225
DN50 (2")	40.0 10.5	1350 357
2 1/2"	60.0 16.0	1850 357
DN80 (3")	90.0 24.0	2800 739
DN100 (4")	125.0 33.0	4350 1149

K-Factors for TK Series

Size	LPM	GPM
1/4"	547	2079
3/8"	300	1140
1/2"	124	471
3/4"	72	274
1"	54	171
1 1/2"	19	72
2"	10.3	39
3"	4.7	18
4"	2.1	8
⚠ K-Factor is Pre-Programmed		

Range of Transmitter

TKW Series	Range LPM GPM
DN15 1/2"	0–30 LPM 0–8 GPM
DN20 3/4"	0–60 LPM 0–16 GPM
DN25 1"	0–90 LPM 0–24 GPM
DN40 1 1/2"	0–200 LPM 0–53 GPM
DN50 2"	0–330 LPM 0–87 GPM
DN80 3"	0–750 LPM 0–198 GPM
DN100 4"	0–1300 LPM 0–344 GPM

Model Selection

TKW - 20 - P - T - - NOTE: Leave blank for standard options

Pipe Size	Material	End Connections	Seals	Optional Output
15: ½"	P: PVC	Sch 80 Soc (Standard on PVC)	FKM (std)	A : 4-20mA
20: ¾"	PP: PP	T: NPT (Standard on PP/PVDF, available on PVC)	E: EPDM	V : 0-5 V
25: 1"	PF: PVDF	F: ANSI 150lb Flange	K: FFKM Kalrez®	PA: 4-20mA + Pulse
40: 1½"		B: Butt Fusion		

TK3W- 20 - SS - SE - - NOTE: Leave blank for standard options

Pipe Size	Material	End Connections	Seals	Optional Output
08: ¼"	S: SS	T : NPT (Standard)	FKM (std)	A : 4-20mA
10: ⅝"		SE: Sanitary	E: EPDM	V : 0-5 V
15: ½"			K: FFKM Kalrez®	PA: 4-20mA + Pulse
20: ¾"				
25: 1"				

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 by instructions furnished by Icon Process Controls Ltd for one year from the date of sale of such products. Icon Process Controls Ltd's obligation under this warranty is solely and exclusively limited to the repair or replacement, at Icon Process Controls Ltd's option, of the products or components, that 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 under 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 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, 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 that: 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 has 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 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 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 under 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 or support@iconprocon.com | Ph: 905.469.9283

Documents / Resources

	<p>ICON PROCESS CONTROLS In-Line Paddle Wheel Flow Meter [pdf] User Guide TKW, TK3W, TK3W In Line Paddle Wheel Flow Meter, TK3W, In Line Paddle Wheel Flow Meter , Paddle Wheel Flow Meter, Wheel Flow Meter, Flow Meter</p>
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References

- [User Manual](#)

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