

Truflo® — TKW | TK3W Series (Blind) In-Line Paddle Wheel Flow Meter Sensor

ICON™ Corrosion-Free
PROCESS CONTROLS Instrumentation Equipment™

Pulse | Voltage | 4-20mA



Industry's Longest Lasting Paddle Wheel Flow Meter

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- ✓ No Programming | Quick Installation
- ✓ Industry's Highest Accuracy: $\pm 0.5\%$
- ✓ Lifetime Warranty*



- ✓ Pulse | Voltage | 4-20mA Outputs
- ✓ Blind | LED Indicator
- ✓ Revolutionary ShearPro® Paddle Wheel Design
- ✓ Low Pressure Drop
- ✓ NEMA 4X | IP66 Protection
- ✓ True Union Design ½" - 2"
- ✓ Flange Connection 3" - 4"

Engineered for accuracy, ruggedness and longevity

The Truflo® TKW Series digital in-line flow meter sensors are easy to install with exceptional guaranteed long-life performance. They are highly repeatable, extremely rugged sensors that offer outstanding value and require no scheduled maintenance.

The TKW Series has a process-ready output signal with a wide dynamic flow range of 1 to 33 ft/s | 0.3 to 10 m/s. The sensor measures liquid flow rates in full pipes.

TKW Series flow meters are offered in a variety of materials and are available from ¼" - 4" pipe sizes. The many material choices, including PVC, PP, PVDF and 316SS make this model highly adaptable and chemically resistant to many corrosive liquid process applications.

The TKW Series flow meter bodies (PVC, PP, PVDF) are true-union designed up to 2" just as any true-union ball valve is designed. 3" - 4" versions are flanged. This blind unit comes completely pre-programmed with a bright LED power indicator.

* The Truflo® TKW Series also comes equipped with a lifetime warranty on the paddle wheel assembly.



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In-Line Paddle Wheel Flow Meter Sensor

New ShearPro® Design

- ✓ Contoured Flow Profile
- ✓ Reduced Turbulence = Increased Longevity
- ✓ 78% Less Drag than Old Flat Paddle Design*

*Ref: NASA "Shape Effects on Drag"

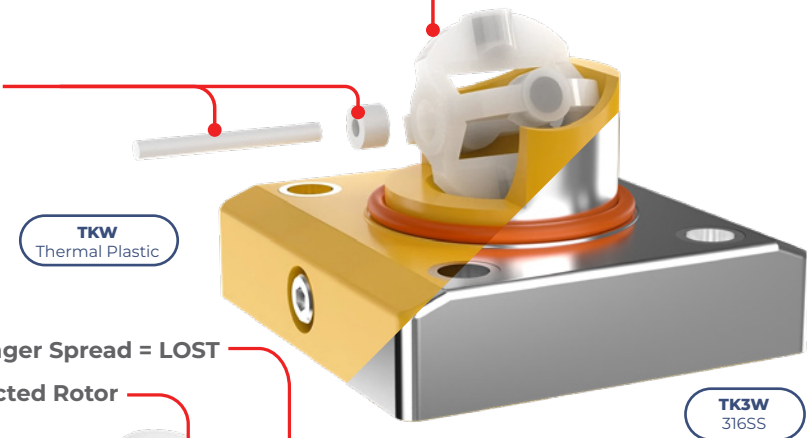


Tefzel® Paddle Wheel

- ✓ Superior Chemical And Wear Resistance vs PVDF

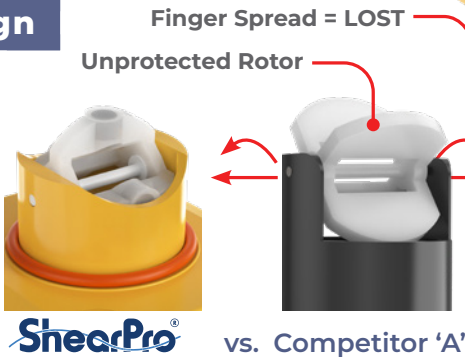
Zirconium Ceramic Rotor | Bushings

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



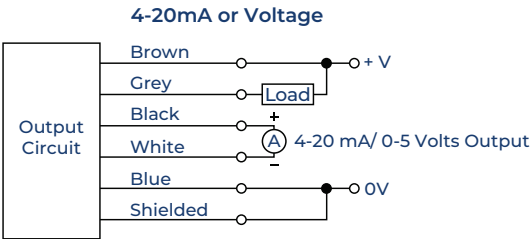
ShearPro® Through-Pin Design

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

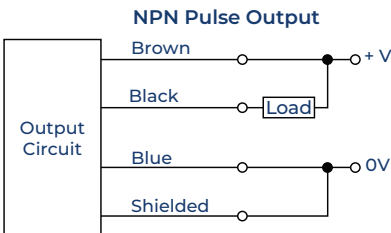


Wiring Diagram

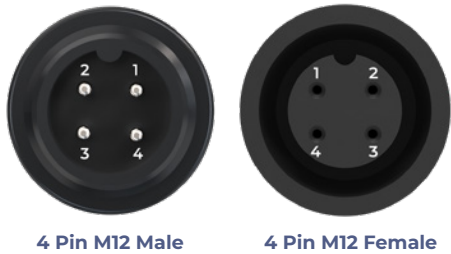
4-20mA or Voltage	
Wire Color	Description
Brown	+VDC
Black	4-20mA+
White	4-20mA-
Blue	-VDC



NPN Pulse Output	
Wire Color	Description
Brown	+VDC
Black	Pulse
Blue	-VDC



M12 Connection*



4-20mA + Pulse		
Pin	Wire Color	Description
1	Brown	+VDC
2	Black	mA+
3	Blue	-VDC mA-
4	White	Pulse

*Only for units with M12 connection

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In-Line Paddle Wheel Flow Meter Sensor



Technical Specifications

General		
Operating Range	1 to 33 ft/s	0.3 to 10 m/s
Pipe Size Range	¼" to 4" **	DN8 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 ZrO ₂	
Paddle Rotor	ETFE Tefzel®	
Electrical		
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal
Supply Voltage	10~30 VDC (4-20mA Output Models) 5~30 VDC (Pulse Output Models)	
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
316SS	200 Psi @ 180°F 40 Psi @ 300°F	14 Bar @ 82°C 2.7 Bar @ 148°C
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
316SS	-40°F to 300°F	-40°C to 148°C
Outputs		
NPN Pulse Voltage 4-20mA		
Display		
Blind LED Indicator		
Standards and Approvals		
UL NSF CE RoHS Compliant		

See Temperature and Pressure Graphs for more information

*Optional
** ¼" - ¾" SS Only

K-Factors for TK Series (V1)

Size	LPM	GPM
¼"	547	2079
⅜"	300	1140
½"	127.6	484.9
¾"	81.8	310.8
1"	55.1	209.4
1½"	18.8	71.4
2"	10.2	38.8
3"	4.7	18
4"	2.1	8

K-Factors for TK Series (V2)

Size	K-Factor
½"	127.6
¾"	81.8
1"	55.1
1½"	18.8
2"	10.2
2½"	6.0

⚠ K-Factor is Pre-Programmed

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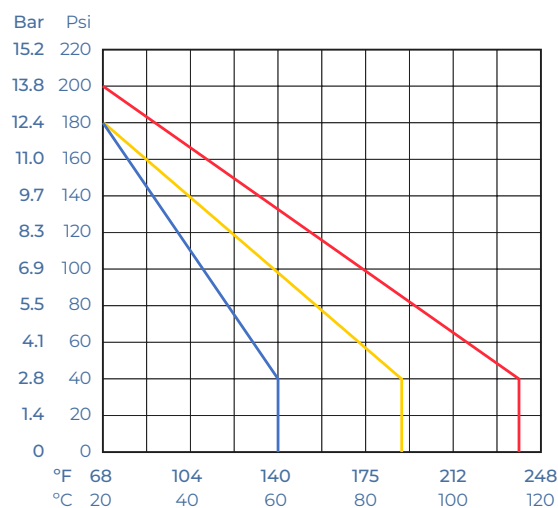
Min/Max Flow Rates

Pipe Size (O.D.)	LPM GPM		LPM GPM		
	0.3m/s min.		10m/s max.		
DN08 (1/4")	0.6	0.16	12	3	◀ SS Only
DN10 (3/8")	1.8	0.48	50	13	◀ SS Only
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	
DN65 (2 1/2")	60.0	16.0	1850	489	
DN80 (3")	90.0	24.0	2800	739	
DN100 (4")	125.0	33.0	4350	1149	

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

■ = PVC ■ = PP ■ = PVDF



Temperature | Pressure Graphs | Non-Shock

Note: The Pressure/Temperature graphs are specifically for the Truflo® Flow Meter Sensors.

During system design the specifications of all components must be considered.

Model Selection

PVC		
Size	End Connections	Part Number
1/2"	Sch 80 Soc	TKW-15-P
3/4"	Sch 80 Soc	TKW-20-P
1"	Sch 80 Soc	TKW-25-P
1 1/2"	Sch 80 Soc	TKW-40-P
2"	Sch 80 Soc	TKW-50-P
3"	Flanged	TKW-80-P
4"	Flanged	TKW-100-P

Add 1st Suffix (end connection):

- T ▶ NPT End Connectors (on PVC)
- B ▶ Butt Fused End Connections for PP or PVDF
- F ▶ Flange ANSI 150lb - Consult Factory

PP		
Size	End Connections	Part Number
1/2"	NPT	TKW-15-PP
3/4"	NPT	TKW-20-PP
1"	NPT	TKW-25-PP
1 1/2"	NPT	TKW-40-PP
2"	NPT	TKW-50-PP
3"	Flanged	TKW-80-PP
4"	Flanged	TKW-100-PP

Add 2nd Suffix (seals):

- FKM (std, no suffix required)
- E ▶ EPDM Seals
- K ▶ FFKM | Kalrez® Seals

Add 3rd Suffix (optional output):

- A ▶ 4-20mA Output
- V ▶ 0-5 V Output
- PA ▶ 4-20mA + Pulse Output

PVDF		
Size	End Connections	Part Number
1/2"	NPT	TKW-15-PF
3/4"	NPT	TKW-20-PF
1"	NPT	TKW-25-PF
1 1/2"	NPT	TKW-40-PF
2"	NPT	TKW-50-PF

Note: PVC Socket Ends (Std)
PP/PVDF NPT Ends (Std)

316SS		
Size	End Connections	Part Number
1/4"	NPT	TK3W-08-SS
3/8"	NPT	TK3W-10-SS
1/2"	NPT	TK3W-15-SS
3/4"	NPT	TK3W-20-SS
1"	NPT	TK3W-25-SS
1 1/2"	NPT	TK3W-40-SS
2"	NPT	TK3W-50-SS
3"	NPT	TK3W-80-SS
4"	NPT	TK3W-100-SS

Add 1st Suffix (end connection):

- T ▶ NPT End Connectors
- SE ▶ Sanitary - Consult Factory for Pricing
- F ▶ Flange ANSI 150lb - Consult Factory

Add 3rd Suffix (optional output):

- A ▶ 4-20mA Output
- V ▶ 0-5 V Output
- PA ▶ 4-20mA + Pulse Output

Add 2nd Suffix (seals):

- FKM (std, no suffix required)
- E ▶ EPDM Seals
- K ▶ FFKM | Kalrez® Seals