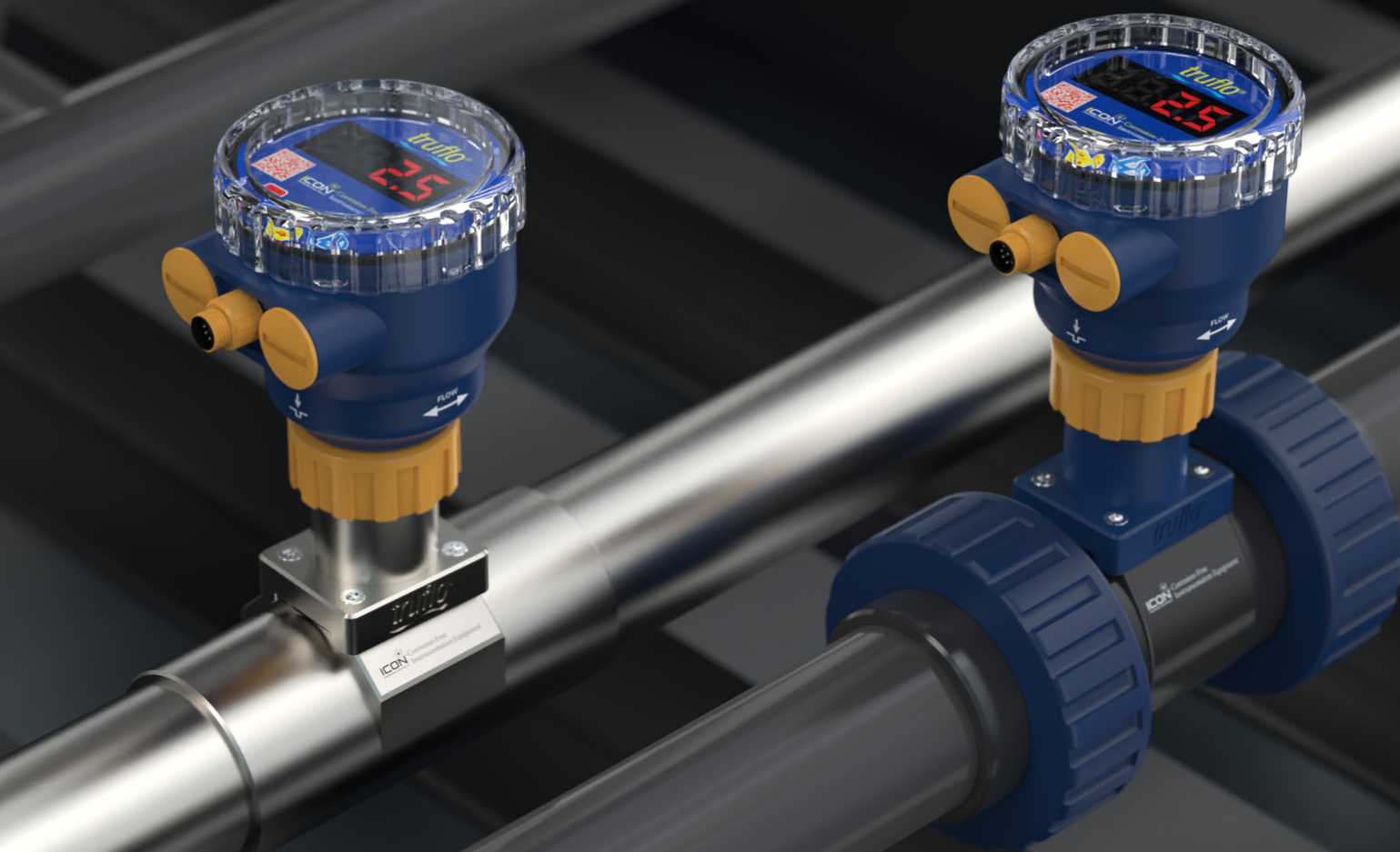


# Truflo® — TIR | TI3R Series Insertion Paddle Wheel Flow Meter Sensor

**ICON**™ Corrosion-Free  
PROCESS CONTROLS Instrumentation Equipment™

Flow Rate | Pulse | 4-20mA | Voltage\*

 **IO-Link**



**truflo**®

## Industry's **Longest Lasting** Paddle Wheel Flow Meter

# Truflo® — TIR | TI3R Series

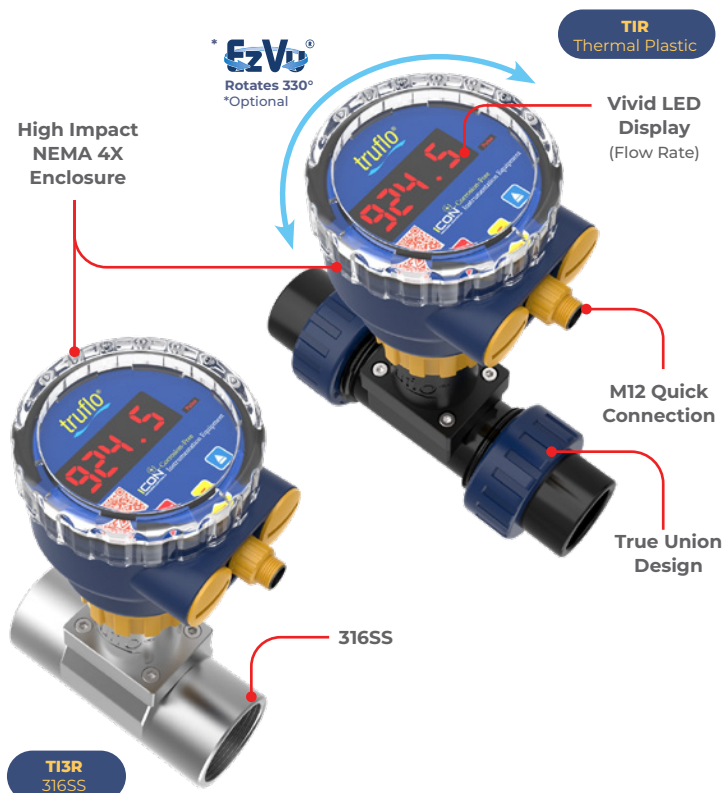
## Insertion Paddle Wheel Flow Meter Sensor

**ICON**™ Corrosion-Free  
PROCESS CONTROLS Instrumentation Equipment™

- ✓ Lifetime Warranty
- ✓ ½" – 24" Line Sizes
- ✓ Pulse | 4-20mA | Voltage (Optional)

### Features

- ✓ M12 Quick Connection
- ✓ Industry's Highest Accuracy: ±0.5% F.S
- ✓ Double O-Ring Seal



### Industry's Most Accurate & Reliable Paddle Wheel Flow Meter Sensors

The TIR digital flow meter sensors are easy to install with exceptional guaranteed long-life performance and have been engineered to provide long-term accurate flow measurement in tough industrial applications.

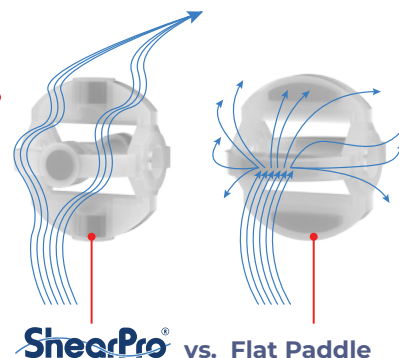
The paddle wheel assembly consists of an engineered high performance Tefzel® paddle and micro-polished zirconium ceramic rotor pin and bushings, providing excellent chemical and wear resistant properties.

The TIR Series paddle wheel flow meter sensors are highly repeatable, exceptionally accurate, extremely rugged, offer outstanding value and require absolutely no maintenance.

The TIR flow meter sensors can be installed using Truflo's® extensive line of ANSI and DIN fittings. Truflo® offers SDR Pipe Saddles from DN15 - DN600 in GFPP material.

### Revolutionary 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 & 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



On Paddle Wheel Assembly

# Truflo® — TIR | TI3R Series

## Insertion Paddle Wheel Flow Meter Sensor



### Technical Specifications

| General                                                                     |                                                      |                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------|----------------------------------|
| Operating Range                                                             | 1 to 33 ft/s                                         | 0.3 to 10 m/s                    |
| Pipe Size Range                                                             | ½ to 24"                                             | DN15 to DN600                    |
| 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 <sub>2</sub>                 |                                  |
| Paddle   Rotor                                                              | ETFE Tefzel®                                         |                                  |
| Electrical                                                                  |                                                      |                                  |
| Frequency                                                                   | 49 Hz per m/s nominal                                | 15 Hz per ft/s nominal           |
| Supply Voltage                                                              | 10-30 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°F |
| PP                                                                          | 180 Psi @ 68°F   40 Psi @ 190°F                      | 12.5 Bar @ 20°C   2.7 Bar @ 88°F |
| PVDF                                                                        | 200 Psi @ 68°F   40 Psi @ 240°F                      | 14 Bar @ 20°C   2.7 Bar @ 115°F  |
| 316SS                                                                       | 200 Psi @ 180°F   40 Psi @ 300°F                     | 14 Bar @ 82°C   2.7 Bar @ 148°F  |
| 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                   |
| Output                                                                      |                                                      |                                  |
| Pulse   4-20mA   Voltage (0~5V)*                                            |                                                      |                                  |
| Display                                                                     |                                                      |                                  |
| LED   Flow Rate                                                             |                                                      |                                  |
| Standards and Approvals                                                     |                                                      |                                  |
| UL   NSF   CE   RoHS Compliant                                              |                                                      |                                  |

See Temperature and Pressure Graphs for more information

\* Optional

### Model Selection

| PVC   PP   PVDF |             |          |
|-----------------|-------------|----------|
| Size            | Part Number | Material |
| ½" - 4"         | TIR-P-S     | PVC      |
| 6" - 24"        | TIR-P-L     | PVC      |
| 1" - 4"         | TIR-PP-S    | PP       |
| 6" - 24"        | TIR-PP-L    | PP       |
| 1" - 4"         | TIR-PF-S    | PVDF     |
| 6" - 24"        | TIR-PF-L    | PVDF     |

Add Suffix -  
'E' - EPDM Seals

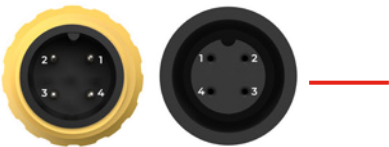
| 316SS    |             |          |
|----------|-------------|----------|
| Size     | Part Number | Material |
| ½" - 4"  | TI3R-SS-S   | 316SS    |
| 6" - 24" | TI3R-SS-L   | 316SS    |

Add Suffix -  
'E' - EPDM Seals

# Truflo® — TIR | TI3R Series

## Insertion Paddle Wheel Flow Meter Sensor

### Terminal Connections



#### IO-Link Connection

| Terminal | Description      |
|----------|------------------|
| 1        | 10~30 VDC        |
| 2        | Factory Specific |
| 3        | - VDC            |
| 4        | IO-Link          |

#### M12 Connection (no Internal wiring required)

| Terminal | Description      | Color  |
|----------|------------------|--------|
| 1        | 10~30 VDC        | Brown  |
| 2        | Pulse Output NPN | White  |
| 3        | - VDC            | Blue   |
| 4        | Pulse Output PNP | Black  |
| 5        | 4-20mA + or V*   | Yellow |
| 6        | 4-20mA - or V*   | Grey   |

\*Optional

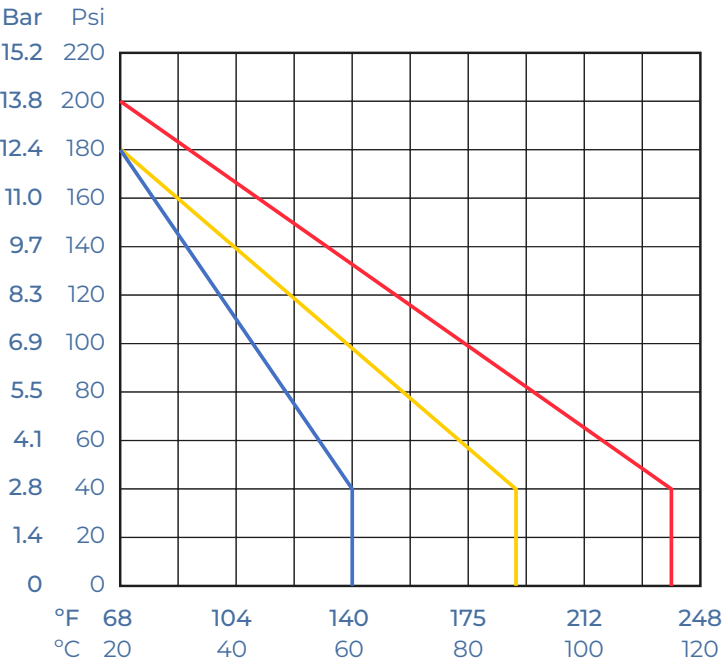


### Min/Max Flow Rates

| 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   489.0   |
| 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 |

### Pressure vs. Temperature

■ = PVC
 ■ = PP
 ■ = PVDF



\*Optional

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

# Truflo® — TIR | TI3R Series

## Insertion Paddle Wheel Flow Meter Sensor

### Fittings and K-Factor

#### TEE FITTINGS



| Tee Fitting |     | K-Factor |        | Sensor Length |
|-------------|-----|----------|--------|---------------|
| IN          | DN  | LPM      | GPM    |               |
| ½" (V1)     | 15  | 156.1    | 593.0  | S             |
| ½" (V2)     | 15  | 267.6    | 1013.0 | S             |
| ¾"          | 20  | 160.0    | 604.0  | S             |
| 1"          | 25  | 108.0    | 408.0  | S             |
| 1½"         | 40  | 37.0     | 140.0  | S             |
| 2"          | 50  | 21.6     | 81.7   | S             |
| 2½"         | 65  | 14.4     | 54.4   | S             |
| 3"          | 80  | 9.3      | 35.0   | S             |
| 4"          | 100 | 5.2      | 19.8   | S             |

#### TEE FITTINGS (V2)

| Size | K-Factor |
|------|----------|
| ½"   | 282.0    |
| ¾"   | 196.0    |
| 1"   | 136.0    |
| 1½"  | 43.2     |
| 2"   | 23.2     |

#### CLAMP-ON SADDLES



| Clamp Saddles |     | K-Factor |      | Sensor Length |
|---------------|-----|----------|------|---------------|
| IN            | DN  | LPM      | GPM  |               |
| 2"            | 50  | 21.6     | 81.7 | S             |
| 3"            | 80  | 9.3      | 35.0 | S             |
| 4"            | 100 | 5.2      | 19.8 | S             |
| 6"            | 150 | 2.4      | 9.2  | L             |
| 8"            | 200 | 1.4      | 5.2  | L             |

#### CPVC SOCKET WELD-ON ADAPTERS



| Weld On Adapter |      | K-Factor |      | Sensor Length |
|-----------------|------|----------|------|---------------|
| IN              | DN   | LPM      | GPM  |               |
| 2"              | 50   | 14.4     | 54.4 | S             |
| 2½"             | 65   | 9.3      | 35.5 | S             |
| 3"              | 80   | 9.3      | 35.0 | S             |
| 4"              | 100  | 5.2      | 19.8 | S             |
| 6"              | 150  | 2.4      | 9.2  | L             |
| 8"              | 200  | 1.4      | 5.2  | L             |
| 10"             | 250  | 0.91     | 3.4  | L             |
| 12"             | 300  | 0.65     | 2.5  | 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             |



### Installation Fittings



#### SA Clamp-On Saddle Fittings

- PVC Material
- Viton® O-Rings
- Available in Metric DIN
- Will Accept Signet® Type Flow Meter

| PVC  |             |
|------|-------------|
| Size | Part Number |
| 2"   | SA020       |
| 3"   | SA030       |
| 4"   | SA040       |
| 6"   | SA060       |
| 8"   | SA080       |



#### PT | PPT | PFT Installation Fittings

- PVC | PP | PVDF
- Socket End Connections
- Will Accept Signet® Type Flow Meter
- True-Union Design

|      | PVDF        | PVC         | PP          |
|------|-------------|-------------|-------------|
| Size | Part Number | Part Number | Part Number |
| ½"   | PFT005      | PT005       | PPT005      |
| ¾"   | PFT007      | PT007       | PPT007      |
| 1"   | PFT010      | PT010       | PPT010      |
| 1½"  | PFT015      | PT015       | PPT015      |
| 2"   | PFT020      | PT020       | PPT020      |

Add Suffix -

'E' - EPDM Seals

'T' - NPT End Connectors

'B' - Butt Fused End Connections for PP or PVDF



#### SAR Clamp-On Saddle Fittings (SDR Pipe)

- PVC Material
- Viton® O-Rings
- Available in Metric DIN
- Will Accept Signet® Type Flow Meter

| PVC  |             |
|------|-------------|
| Size | Part Number |
| 2"   | SAR020      |
| 3"   | SAR030      |
| 4"   | SAR040      |
| 6"   | SAR060      |
| 8"   | SAR080      |
| 10"  | SAR100      |
| 12"  | SAR120      |
| 14"  | SAR140      |
| 16"  | SAR160      |



#### CT CPVC Tee Installation Fitting

- 1"-4" Pipe Sizes
- Easy to Install
- Will Accept Signet® Flow Meter

| CPVC |             |
|------|-------------|
| Size | Part Number |
| 1"   | CT010       |
| 1 ½" | CT015       |
| 2"   | CT020       |
| 3"   | CT030       |
| 4"   | CT040       |

Add Suffix -

'E' - EPDM Seals

'T' - NPT End Connectors

'B' - Butt Fused End Connections for PP or PVDF



#### PG Glue-On Adapter

- 2"-24" Pipe Sizes
- Easy to Install
- Will Accept Signet® Flow Meter

| Glue-On Adapter – CPVC |             |
|------------------------|-------------|
| Size                   | Part Number |
| 2" - 4"                | PG4         |
| 6" - 24"               | PG24        |

# Truflo® — TIR | TI3R Series

## Insertion Paddle Wheel Flow Meter Sensor



### SWOL Weld-On Adapter

- 2"-12" Pipe Sizes
- 316SS Weld-o-let with PVDF insert
- Easy to Install
- Will Accept Signet® Flow Meter

| Weld-On Adapter - 316SS |             |
|-------------------------|-------------|
| Size                    | Part Number |
| 3"                      | SWOL3       |
| 4"                      | SWOL4       |
| 6"                      | SWOL6       |
| 8"                      | SWOL8       |
| 10"                     | SWOL10      |
| 12"                     | SWOL12      |



### SST 316SS TI3 Series NPT Tee Fittings

- Will Accept Signet® Type Flow Meter

| Threaded Tee Fitting - 316SS |             |
|------------------------------|-------------|
| Size                         | Part Number |
| 1/2"                         | SST005      |
| 3/4"                         | SST007      |
| 1"                           | SST010      |
| 1 1/2"                       | SST015      |
| 2"                           | SST020      |
| 3"                           | SST030      |
| 4"                           | SST040      |



### SSS 316SS TI3 Series Sanitary Tee Fittings

- Will Accept Signet® Type Flow Meter

| Sanitary Tee Fitting - 316SS |             |
|------------------------------|-------------|
| Size                         | Part Number |
| 1/2"                         | SSS005      |
| 3/4"                         | SSS007      |
| 1"                           | SSS010      |
| 1 1/2"                       | SSS015      |
| 2"                           | SSS020      |
| 3"                           | SSS030      |
| 4"                           | SSS040      |



### SSF 316SS TI3 Series Flanged Tee Fittings

- Will Accept Signet® Type Flow Meter

| Flanged Tee Fitting - 316SS |             |
|-----------------------------|-------------|
| Size                        | Part Number |
| 1/2"                        | SSF005      |
| 3/4"                        | SSF007      |
| 1"                          | SSF010      |
| 1 1/2"                      | SSF015      |
| 2"                          | SSF020      |
| 3"                          | SSF030      |
| 4"                          | SSF040      |