

## TF-100™ Series

### Vibrating Tuning Fork



#### Easy Installation

The TF-100 requires no calibration. Install, connect power and outputs, and you're done.

#### Compact Design

Integral electronics with sensor lengths as short as 1.9" (47mm) makes this switch ideal for limited space installations.

#### Reliability

Internal Self-Check feature monitors the electronics and sensor. If there is a fault, the output switches to the Alarm State.

#### Output

- TF-L includes a DPDT relay output for local control of pumps, valves, or alarm indication.
- TF-P offers PNP or NPN transistor output.
- TF-T is a current output switch (8 mA / 16 mA).

#### Application

The TF-100 Series Point Level Switch is designed for reliable indication of liquids and light slurries. The output can be set to indicate alarm on either high level for spill prevention, or low level for run-dry protection.

#### Versatility

This versatile level switch requires no calibration and is available with relay, transistor, or current outputs.

The electronic module responds to changes in frequency from an uncovered to a covered fork. As such, it is immune to changes in electrical properties of the material. This allows the TF-100 Series to be used in vessels that can have either conductive or insulating liquids.

#### Maintenance Free

When used in accordance with installation guidelines the TF-100 Series - Vibrating Tuning Fork requires no routine maintenance.

#### Sanitary







Sanitary models are available for Pharmaceutical and Food & Beverage applications.



# Point Level Measurement

## TF-100™ Series

### Specifications

TF-100	TF-L Relay Output	TF-P Transistor Output	TF-T Current Output
<b>Technology</b>	Vibrating Tuning Fork	Vibrating Tuning Fork	Vibrating Tuning Fork
<b>Calibration</b>	None	None	None
<b>Modes of Operation (Protection)</b>	High Level (Overfill) Low Level (Run-Dry)	High Level (Overfill) Low Level (Run-Dry)	High Level (Overfill) Low Level (Run-Dry)
<b>Repeatability</b>	Approx. 2 mm with vertical Installation	Approx. 2 mm with vertical Installation	Approx. 2 mm with vertical Installation
<b>Ambient Electronic Temp.</b>	- 40° to 158° F - 40° to 70° C	- 40° to 158° F - 40° to 70° C	- 40° to 158° F - 40° to 70° C
<b>Storage Temperature</b>	- 40° to 176° F - 40° to 80° C	- 40° to 176° F - 40° to 80° C	- 40° to 176° F - 40° to 80° C
<b>Indicators</b>	Two Color LED (Red / Green)	Two Color LED (Red / Green)	Two Color LED (Red / Green)
<b>Power Requirement</b>	20 to 253 VAC, 50/60Hz 20 to 72 VDC	10 to 55 VDC	11 to 36 VDC
<b>Density</b>	0.7 to 2.5g/cm <sup>3</sup> (Standard) 0.5 to 0.7g/cm <sup>3</sup> (Selectable)	0.7 to 2.5g/cm <sup>3</sup> (Standard) 0.5 to 0.7g/cm <sup>3</sup> (Selectable)	0.7 to 2.5g/cm <sup>3</sup> (Standard) 0.5 to 0.7g/cm <sup>3</sup> (Selectable)
<b>Output</b>	DPDT Relay Min 10 micro Amps Max 5 Amps AC 1 Amp DC	Floating Transistor PNP or NPN	8 mA Normal 16 mA Alarm
<b>Housing</b>	Powder Coated Aluminum	Powder Coated Aluminum	Powder Coated Aluminum
<b>Ingress Protection</b>	NEMA 4X / IP66	NEMA 4X / IP66	NEMA 4X / IP66
<b>Approvals</b>	 Explosion proof Class 1, Div. 1 Groups A, B, C, D, T5 Ta = 60° C, Explosion Proof Class 1, IIC T5 Ta = 60° C Dust Ignition Proof Div. II, III, Groups E, F, G, T5 Ta = 60° C, Type NEMA 4X/IP66 Non-incendive Class 1, Div. 2 Groups A, B, C, D, T5 Ta = 60° C Non-incendive Class 1, Div. 2, IIC T5 Ta = 60° C, Suitable for Class II, Div. 2, F, G, T5 Ta = 60° C Suitable for Class III, Div. 1, T5 Ta = 60° C	 Explosion proof Class 1, Div. 1 Groups A, B, C, D, T5 Ta = 60° C, Explosion Proof Class 1, IIC T5 Ta = 60° C Dust Ignition Proof Div. II, III, Groups E, F, G, T5 Ta = 60° C, Type NEMA 4X/IP66 Non-incendive Class 1, Div. 2 Groups A, B, C, D, T5 Ta = 60° C, Non-incendive Class 1, Div. 2, IIC T5 Ta = 60° C Suitable for Class II, Div. 2, F, G, T5 Ta = 60° C, Suitable for Class III, Div. 1, T5 Ta = 60° C	 Explosion proof Class 1, Div. 1 Groups A, B, C, D, T5 Ta = 60° C, Explosion Proof Class 1, IIC T5 Ta = 60° C Dust Ignition Proof Div. II, III, Groups E, F, G, T5 Ta = 60° C, Type NEMA 4X/IP66 Intrinsically Safe Class I, II, III, Groups A, B, C, D, E, F, G, T4 TA = 60° C when powered by an I.S. supply meeting the following entity requirements: Vmax = 31 V, Imax = 166mA, Pi = 0.667W, Ci = 0n F, Li = 0mH, 12 - 31 VDC 116 mA Max. I/O/Aex ia / IIC/ T4 TA = 60° C, ANI/1/II, III, 2, A, B, C, D, E, F, G, T5 Ta = 60° C, Non-incendive Class 1, Div. 2 Groups A, B, C, D, T5 Ta = 60° C Non-incendive Class 1, Div. 2, IIC T5 Ta = 60° C, Suitable for Class II, Div. 2, F, G, T5 Ta = 60° C, Suitable for Class III, Div. 1, T5 Ta = 60° C
	 CLI, Div. 1, Groups A, B, C, & D, CLII, III, Div. 1, Groups E, F, & G, T5 Ta = 60° C, Type 5, 4X, IP66	 CLI, Div. 1, Groups A, B, C, & D, CLII, III, Div. 1, Groups E, F, & G, T5 Ta = 60° C, Type 5, 4X, IP66	 CLI, Div. 1, Groups A, B, C, & D CLII, III, Div. 1, Groups E, F, & G T5 Ta = 60° C Type 5, 4X, IP66 CLI, II, III Div. 1, Groups A, B, C, D, E, F, & G Class I, Zone 0 T4 Ta = 60° C Type 4, 4X, IP66

# Point Level Measurement

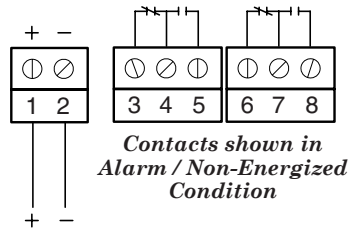
## TF-100™ Series

### Specifications

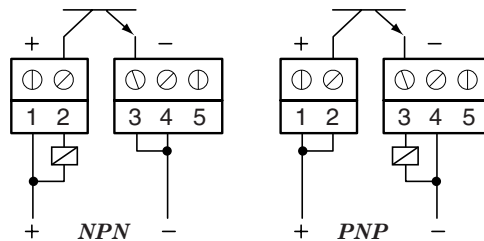
Sensing Element			
Materials of Construction	316 L Stainless Steel (optional flanges and tri-clamp mountings available)	316 L Stainless Steel (optional flanges and tri-clamp mountings available)	316 L Stainless Steel (optional flanges and tri-clamp mountings available)
Mounting	¾ inch NPT (Standard)	¾ inch NPT (Standard)	¾ inch NPT (Standard)
Temperature	-58° to 302° F -50° to 150° C	-58° to 302° F -50° to 150° C	-58° to 302° F -50° to 150° C
Process Pressure	Vacuum to 928 psi (0 to 64 Bar)	Vacuum to 928 psi (0 to 64 Bar)	Vacuum to 928 psi (0 to 64 Bar)
Viscosity	0.1 to 10,000 Centipoise	0.1 to 10,000 Centipoise	0.1 to 10,000 Centipoise

### Wiring

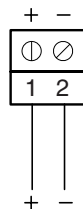
#### TF-L Relay Output



#### TF-P Transistor Output



#### TF-T Current Output

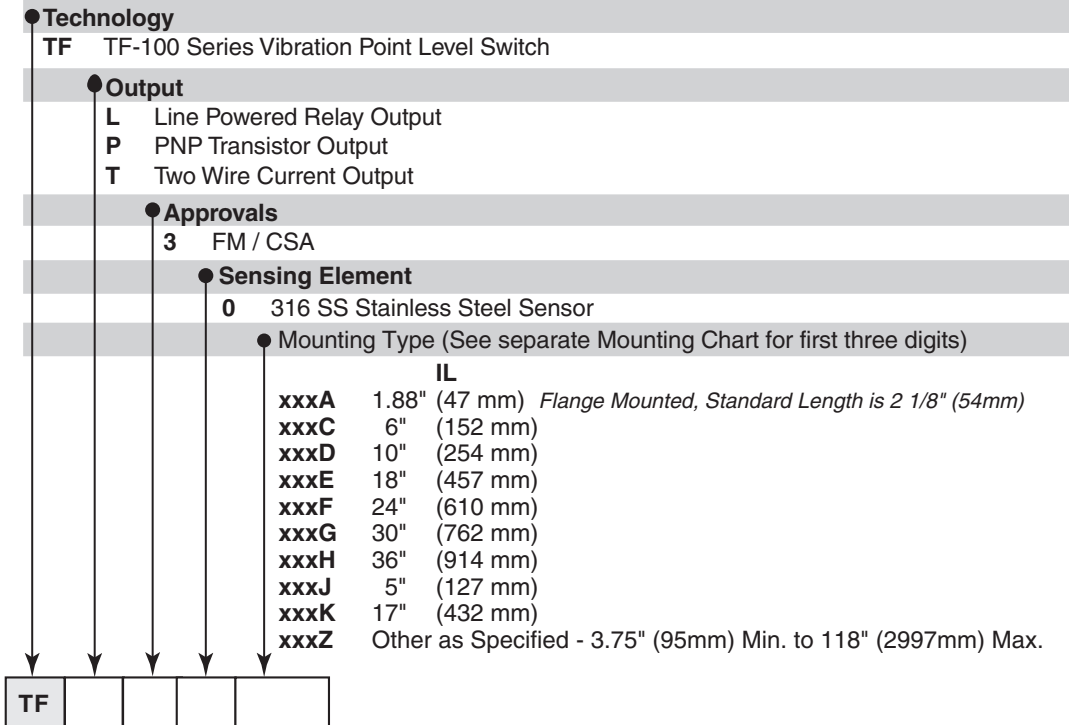


# Point Level Measurement

## TF-100™ Series

### Model Numbering

#### TF -100 Series



#### Mounting Chart

<b>A1B</b> 3/4" (19 mm) NPT					
<b>DA1</b> 1" (25 mm) 150# RF 316 / 316LSS	<b>DG1</b> 2" (51 mm) 300# RF 316 / 316LSS				
<b>DB1</b> 1 1/2" (38 mm) 150# RF 316 / 316LSS	<b>DJ1</b> 3" (76 mm) 300# RF 316 / 316LSS				
<b>DC1</b> 2" (51 mm) 150# RF 316 / 316LSS	<b>DL1</b> 4" (102 mm) 300# RF 316 / 316LSS				
<b>DI1</b> 3" (76 mm) 150# RF 316 / 316LSS	<b>C2B</b> 1" (25 mm) Tri-Clamp 3A Sanitary				
<b>DK1</b> 4" (102 mm) 150# RF 316 / 316LSS	<b>C3B</b> 1 1/2" (38 mm) Tri-Clamp 3A Sanitary				
<b>DE1</b> 1" (25 mm) 300# RF 316 / 316LSS	<b>C4B</b> 2" (51 mm) Tri-Clamp 3A Sanitary				
<b>DF1</b> 1 1/2" (38 mm) 300# RF 316 / 316LSS	<b>C6B</b> 3" (76 mm) Tri-Clamp 3A Sanitary				



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