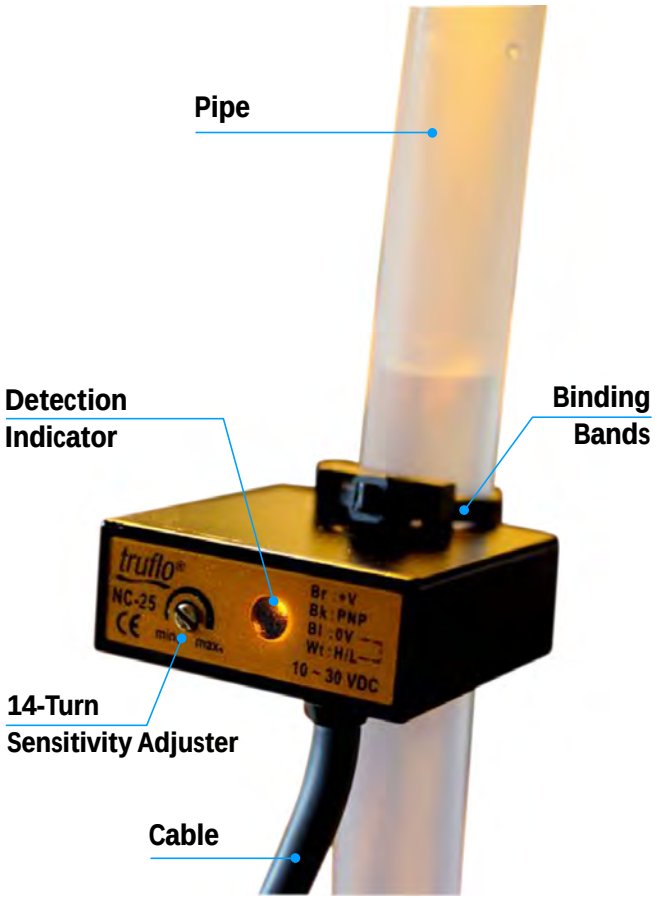
Flow & Level Switch Non Intrusive - All Plastic Design

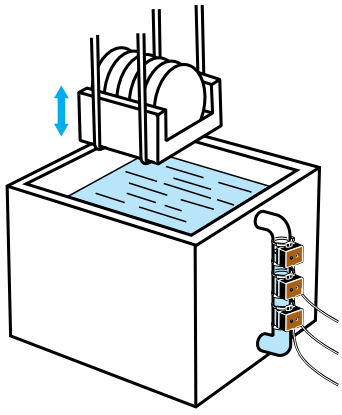


Features

- Fit a Wide Range of Pipe Diameters -7 to13 mm 3/8-1/2"
- Built-in Amplifiers to Save Space
- Flow - No Flow
- Non - Intrusive Design
- Mounting Bracket
- All Plastic Design
- Simple to Install
- Easy to Calibrate
- Low Voltage
- Light weight
- Very Accurate

Applications

Liquid Surface Level Detection



Ordering Information

Sensing Method	Applicable Pipe Diameters	Appearance	Output Configuration
Electrostatic Capacity Method	3/8"-1/2" 7 to 13 mm		NPN Open Collector Output

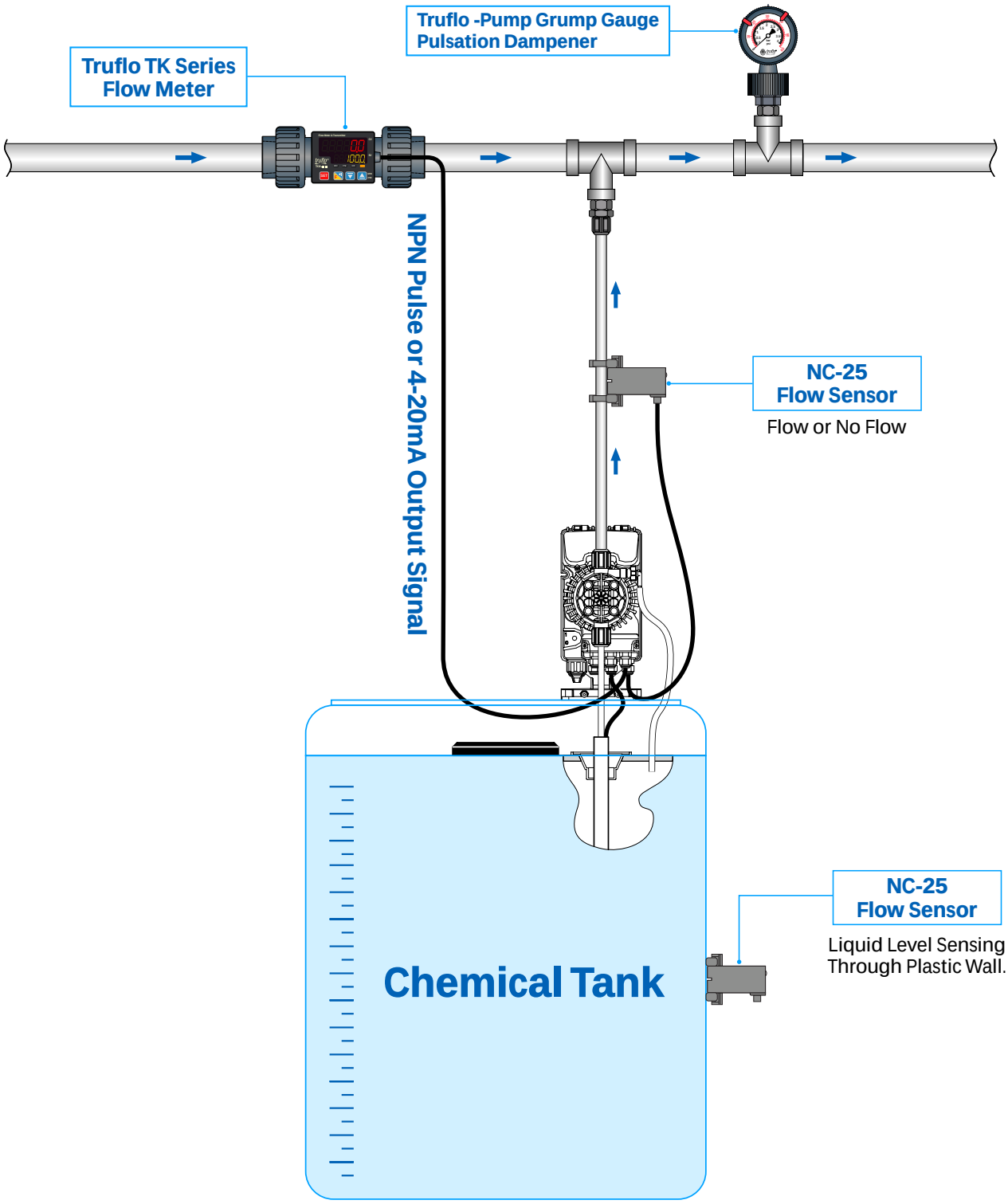
Ratings and Specifications

Applicable Pipes Size	Materials	PP
	Diameter	3/8-1/2" (7 to 13 mm)
	Wall thickness	0.25"
Sensing Object		Liquid
Repeat accuracy		±0.2 mm max.
Power supply voltage (operating voltage range)		12 to 24 VDC, 10% max. ripple (10.8 to 30 VDC)
Current consumption		12 mA max.
Control output	Load current	100 mA max.
	Residual voltage	1 V max. (Load current: 100 mA, Cable length: 2 m)
Sensing liquid position		Indented mark position
Indicators		Detection indicator (orange)
Ambient temperature range		Operating: 0 to 55°C (with no icing or condensation), Storage: -10 to 65°C (with no icing or condensation)
Ambient humidity range		Operating/Storage: 25% to 85% (with no condensation)
Temperature influence		±4 mm of detection level at 23°C in the temperature Range of 0 to 55°C (with pure water or 20% saline solution)
Voltage influence		±0.5 mm of detection level at the rated voltage in rated voltage ±10% range
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case
Dielectric strength		500 VAC, 50/60 Hz for 1 min between current-carrying parts and case
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance		Destruction: 500 m/s2 3 times each in X, Y, and Z directions
Degree of protection		IP66 (IEC)
Connection method		Pre-wired Models (Standard cable length: 2 m)
Weight (packed state)		Approx. 70 g
Materials	Case, Cover	Heat-resistant PP
	Cable clamp	Nylon
Accessories		Two bands

* Stable detection will not be possible in the following cases. Confirm detection capability with the Sensor installed before actual application.

1. If the specific inductive capacity or the specific electric conductivity of the liquid is too low, the liquid position may not be detected since this sensor is a capacitive sensor.
2. If the quantity of liquid is too low or the change in quantity is too low in comparison to the change in liquid level because the pipe is too thin or the walls of the pipe are too thick
3. If there is a viscous film on the inner pipe wall, large quantities of foam or air bubbles, or excessive buildup of dirt on the inner pipe wall

Typical application



Wiring Diagrams

Operation Mode	Timing Chart	Output circuit
No	Liquid level: Present / None Load (between brown and black leads): Operate / Reset Detection indicator (orange): ON / OFF	Brown, +V, Load, Black *, Main circuit, Blue, 0 V * Load current: 100 mA max.

Safety Precautions

Refer to Warranty and Limitations of Liability.

WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.

Power Supply

- If the load and Sensor are connected to different power supplies, always turn ON the Sensor power first.
- Switching noise can cause operating mistakes if a commercial switching regulator is used. When using a switching regulator, always ground the frame ground terminal and the ground terminal.

Precautions for Correct Use

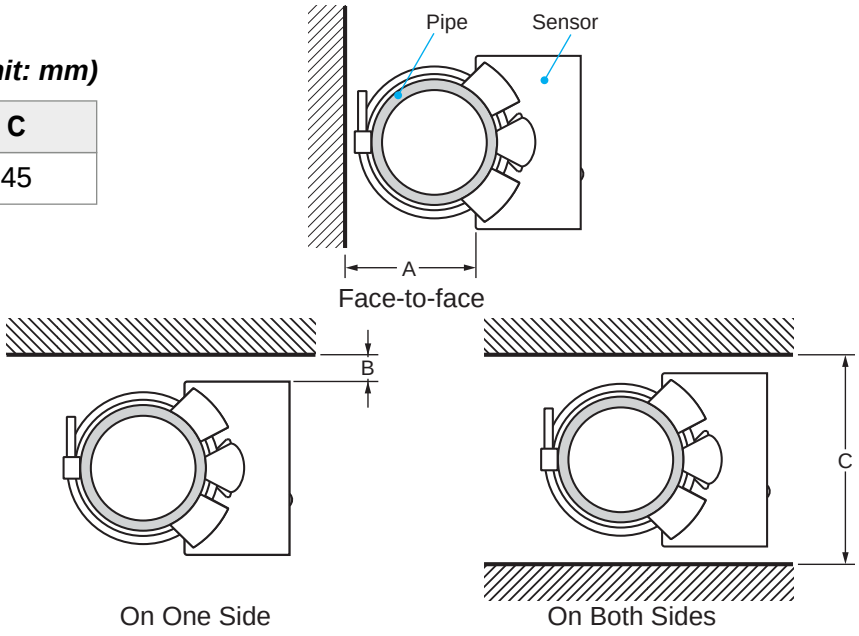
Do not use this Product Under Ambient Conditions that Exceed the Ratings.

Influence of Surrounding Objects

When mounting the Sensor, maintain at least the distances in the following diagrams from surrounding metal objects or other conductors to prevent the Sensor from being affected by objects other than the sensing object.

Influence of Surrounding Objects ***(Unit: mm)***

Distance	A	B	C
	25	5	45



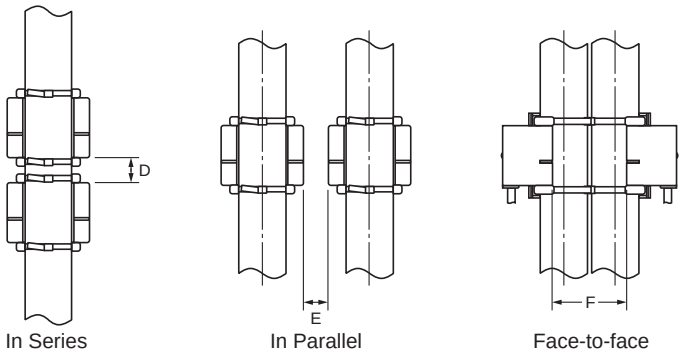
Influence of Surrounding Objects

When installing Sensors in series, in parallel, or face-to-face, ensure that the minimum distances given in the following table are maintained.

Mutual Interference ***(Unit: mm)***

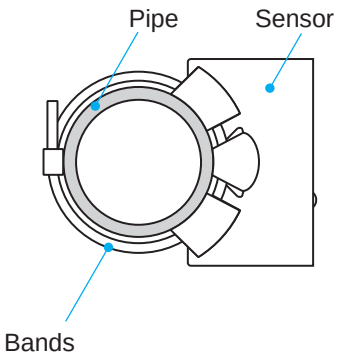
Distance	D	E	F
	10	10	25

Also, always adjust the bottom Sensor first because adjusting the bottom Sensor may affect the detection level of the top Sensor.

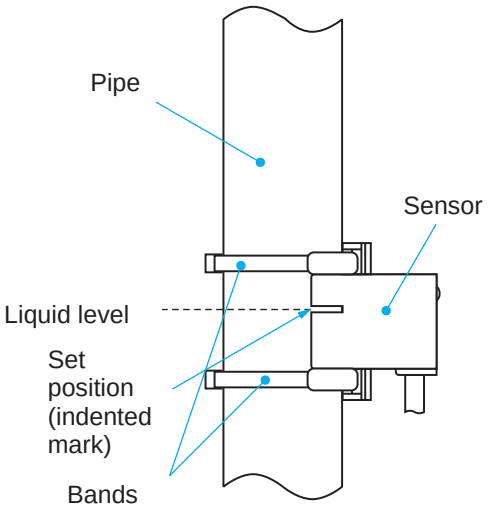


Mounting

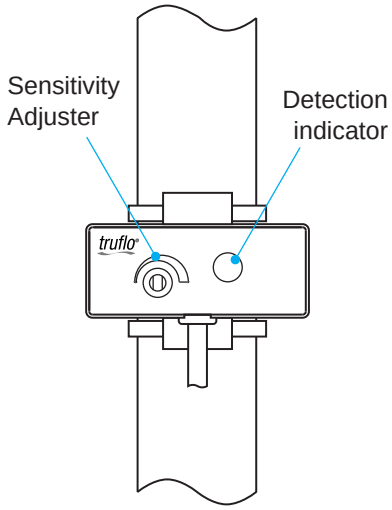
Mount the Sensor securely to the pipe using the enclosed two bands and four slip-proof tubes (two tubes used for each band) as shown in the following diagram.
When mounting the Sensor, be sure the entire Sensor is tight against the pipe along the sensing surface.



Top View



Side View



Front View

Sensitivity Adjustment

For information on the sensitivity adjustment, refer to Technical Guide for Operation for information for Proximity Sensor.