

# Pi<sup>π</sup> Technical Note 16

## SoliSense® Mounting Options

### Introduction

The SoliSense® probe is capable of measuring suspended solids from 2 NTU all the way up to >8% solids (in waste water, up to 50% in other suspended solids). The SoliSense® is suitable for use in waste water, potable water monitoring, mixed liquor suspended solids monitoring, return activated sludge, centrate monitoring, filtrate monitoring, sludge, raw water inlet monitoring, and many more applications where a traditional turbidimeter or suspended solids analyser would be used. The probe can be installed and mounted in several ways to make it suitable for these applications. These are detailed in this Technical Note.

### Dip Installation

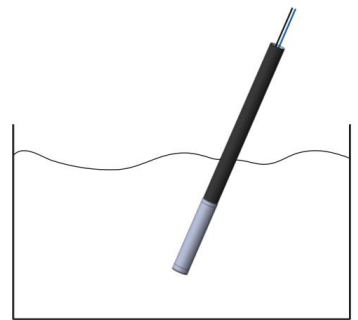
**For:** The measurement of suspended solids/turbidity of samples in open tanks and channels.

**Requirements:** An accessible tank or open channel for dipping the SoliSense® probe into.

**Limitations:** Reflections from solid surfaces, strong sunlight.

#### Installation:

- Position the dip installation where the flow moves over the sensor.
- The sensor optics must be covered by the liquid being measured.
- The face of the SoliSense® probe should be either parallel to the flow or, preferably, facing upstream.
- The SoliSense® probe should be positioned within 35° of the vertical.
- Avoid reflections from surfaces.
  - Suggested clearances between the end of the SoliSense® probe and the surfaces are;
    - For 200mg/l<sup>-1</sup> kaolin in black plastic - 8cm from the base, 2cm from the wall.
    - For 3000mg/l<sup>-1</sup> kaolin in black plastic - 2cm from the base, 2cm from the wall.
    - For 3000mg/l<sup>-1</sup> kaolin in aluminium - 8.5cm from the base, 4cm from the wall.
- The effect of sunlight on the SoliSense® probe can be reduced by submerging the optic sensors. In a sample of 3000mg/l<sup>-1</sup> kaolin, sunlight effects should be removed if the sensor is at least 8.5cm below the surface. In some situations, such as very strong sunlight, it may be necessary to use an optional light shield. The SoliSense® will alarm on excessive ambient light.
- Optional handrail mounting kit.
- Optional pole mounting kit.
- Optional light shield.



### Pipe Insertion

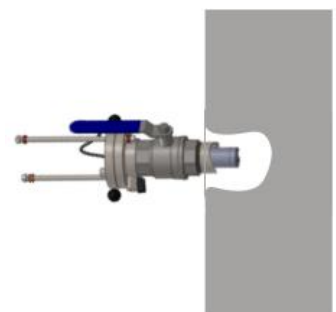
**For:** The in-line measurement of suspended solids/turbidity of samples in pipelines.

**Requirements:** A suitable pipe section where a welding stub can be fitted, space to access the SoliSense® probe to allow it to be inserted into/removed from the pipe.

**Limitations:** Pipe size, pipe material.

#### Installation:

- If possible, fit the SoliSense® probe in a pipe section with an up-flow. The SoliSense® probe can be fitted in a horizontal pipe. In a horizontal pipe, the SoliSense® probe should not be fitted into the top or the bottom of the pipe.
- Fit so that the SoliSense® probe optics are parallel to, or facing, the flow direction.



- Examples of required pipe diameters to avoid reflections are;
  - For 200mg/l<sup>-1</sup> kaolin in stainless steel - 15cm/6".
  - For 3000mg/l<sup>-1</sup> kaolin in stainless steel - 7.5cm/3".

These diameters are for a SoliSense® probe inserted at 90°. If the SoliSense® probe is mounted at a lower angle, these diameters can be reduced.

## Flow Cell

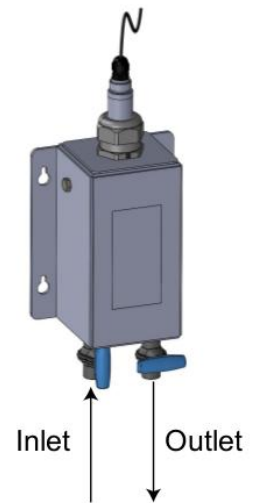
**For:** The at-line measurement of suspended solids/turbidity. This is particularly suited to clean water applications. The flow cell is made of black polypropylene to eliminate reflections and a lid to eliminate external light, so gives excellent results in clean water.

**Requirements:** A sample line from the pipe to the flow cell, space for mounting the flow cell.

**Limitations:** Non-pressurised, blocking of inlet lines, samples dropping out of suspension.

### Installation:

- A suitable location is required to take a sample to/from the system to the flow cell. The inlet to the flow cell is an 8mm push fit connection.
- For suspended solids samples, the flow rate needs to be sufficiently high to prevent settling out of the solids. For many applications, a flow rate of  $\geq 0.5\text{l}/\text{min}^{-1}$  should be sufficient. However, the minimum flow rate required is dependent on the type of solids present in the sample.
- A line is required to send the sample to waste after it has passed through the flow cell. The outlet from the flow cell is a 16mm hose connection.
- A wall or backboard is needed for mounting the flow cell.
- An optional self-draining system is available to prevent the build up of solids within the flow cell.



## Pressure T Fitting

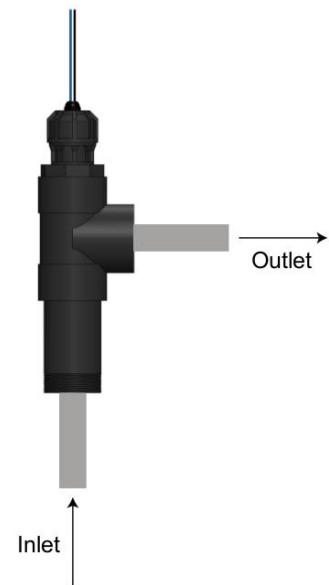
**For:** The measurement of suspended solids/turbidity of samples in pressurised closed pipes.

**Requirements:** A sample line from the pipe to the T fitting, a return line (if required) from the T fitting back to the pipe.

**Limitations:** Maximum pressure is 6 bar.

### Installation:

- A suitable location is required to take a sample line from the system to the T fitting. The inlet to the T fitting is a 3" BSP M connection.
- A line is required to return the sample to the system, or send to waste, after it has passed through the T fitting. The outlet from the T fitting is a 3" BSP F connection.
- Reflected light can cause interference if a shiny surface is visible beyond the 10cm long black plastic inlet tube, that is supplied as part of the fitting. If you need to use a reducing fitting on the end of the inlet tube, try to avoid using a reflective material. If a reflective material such as stainless steel is used for a reducing fitting, the internal surface of the fitting needs to be 3cm beyond the end of the inlet tube.



		Dip Installation	Pipe Insertion	Flow Cell	Pressure T Fitting
<b>Application</b>	Potable Water	✓		✓	✓
	Waste Water	✓	✓		✓
	Industrial Effluent (low solids)	✓	✓	✓	✓
	iIndustrial Effluent (high solids)	✓	✓		✓
<b>Monitoring Location</b>	Open Tank	✓			
	Open Channel	✓			
	Pipeline		✓	✓	✓
	Pressurised System		✓ 10 Bar		✓ 6 Bar