

# Pi Technical Note 46

## UV254 Sample Strainer Unit

### Introduction

The Process Instruments UV254 Sample Strainer Unit is a self cleaning strainer that periodically uses compressed air or clean water to remove dirt from the straining element. The self cleaning strainer protects the connected online analyzer by straining suspended particles from the water sample\*. The strainer assembly is equipped with a three-way operating valve controlled by Pi's CRONOS®/CRIUS® analyzers which periodically forces compressed air/water to be blown backwards through the strainer.

***\*This strainer unit may be required for samples with high levels of suspended particles to avoid the build up of these particles in the UV254 instrument and negatively affecting the UV254 measurement.***

### Theory of Operation

The main sample stream goes through the PVC fitting and only the sample quantity necessary for analysis is strained by the stainless steel element. This avoids the fast accumulation of dirt on the element. A diagram of the sample flow can be seen on the next page.

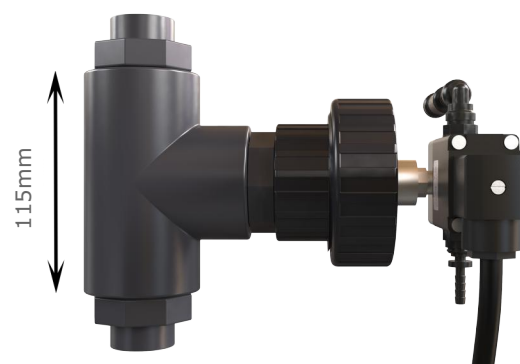
The back flush removes trapped particles on the external side of the straining element. The automatic cleaning time and cleaning frequency are user selectable over a wide range, and the measured parameter is paused while the cleaning takes place so no erroneous data is collected.

The strainer unit can be incorporated as part of a new installation, with the self clean cycle being controlled directly from the CRONOS®/CRIUS® controller. This allows the controller to hold all sensor readings while the clean cycle is performed, avoiding any reading fluctuations being introduced to the sensor data. The cleaning cycle is activated through a single relay contact on the CRONOS®/CRIUS®.

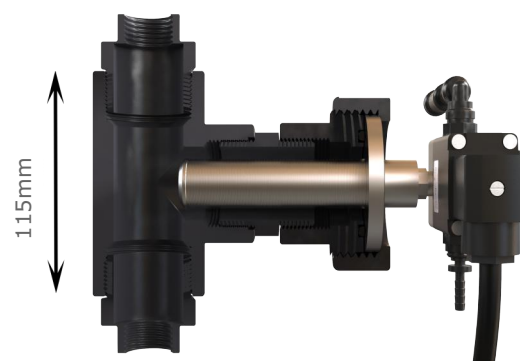
Alternatively, if no relay contact is available in an existing CRONOS®/CRIUS® installation then the flush cycle can be controlled through a separate solenoid timer. This second installation method means no control signal is required from the controller to the strainer assembly, making installation simpler. This does not allow sensor readings to be 'paused' during self cleaning which will result in some reading discrepancies during the cleaning cycle.

### Effect on Sample Conditions

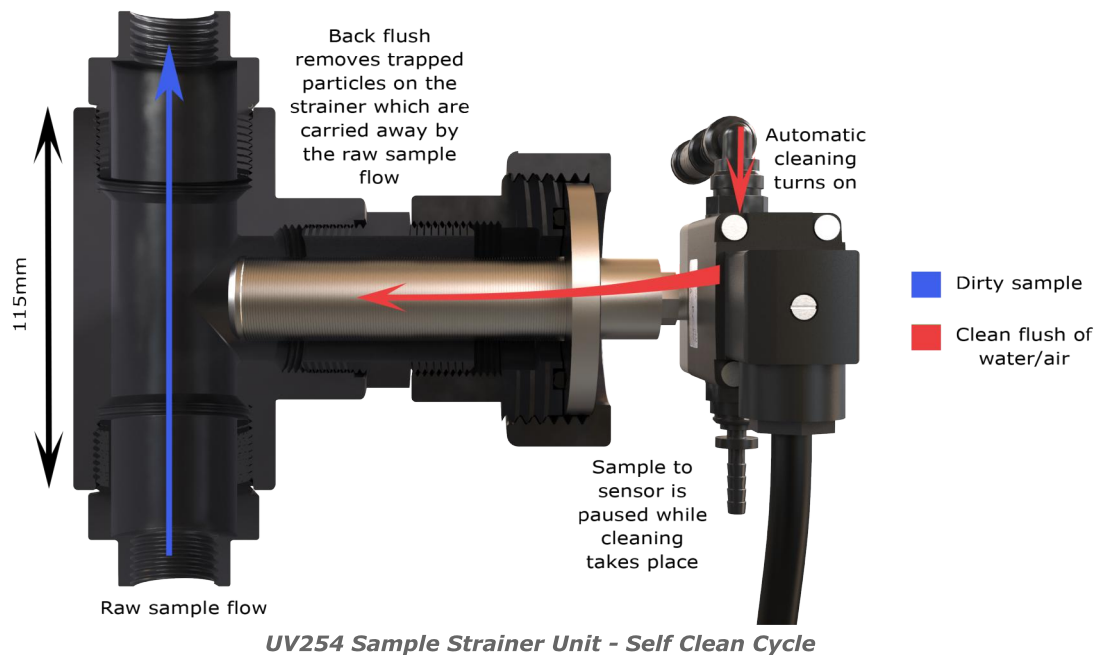
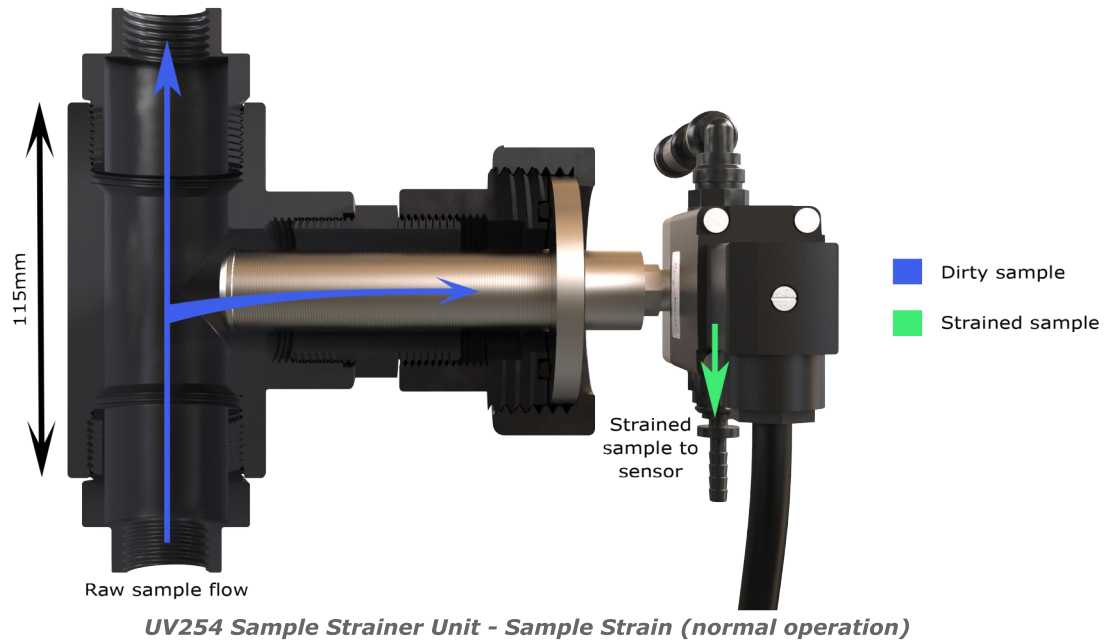
Traditional filtration methods of a sample can inadvertently affect the properties of the sample itself due to the build up of material on the outside of the filter. This build up could be a disinfectant 'sink,' allowing the growth of micro-organisms in the filter itself, potentially releasing additional contaminants into the sample. This sample alteration is avoided with the Pi self cleaning strainer unit through the automated and regular back flushing process. During the back flushing, any build up on the sensor is removed and carried away from the strainer by the passing sample stream avoiding material build up associated with other strainers and even other self cleaning strainers.



UV254 Sample Strainer Unit



UV254 Sample Strainer Unit - Internal Structure



### Specification\*

<b>Strainer body:</b>	PVC
<b>Strainer element:</b>	316 SS
<b>Strainer mesh:</b>	50, 100 micron (others upon request)
<b>Sample and ambient temperature:</b>	Up to 55°C
<b>Protection grade:</b>	IP65
<b>Minimum sample line pressure:</b>	0.3 bar
<b>Maximum sample line pressure:</b>	2.5 bar
<b>Minimum sample line flow rate:</b>	0.1 m <sup>3</sup> /h
<b>Pressurised air pressure:</b>	At least 20% above sample line, pressure up to 3 bar
<b>Sample out flow rate:</b>	0.1-2 l/min depending on sample line pressure
<b>Strainer main connections:</b>	1"
<b>Strainer outlet connection - cleaning air:</b>	8mm O.D. tubing
<b>Strainer outlet connection - sample outlet:</b>	6mm hose tail

\*All subject to change without notice