

Pi Technical Note 146

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 analyser 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®4.0 analysers 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.***



UV254 Sample Strainer Unit

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®4.0 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®4.0.

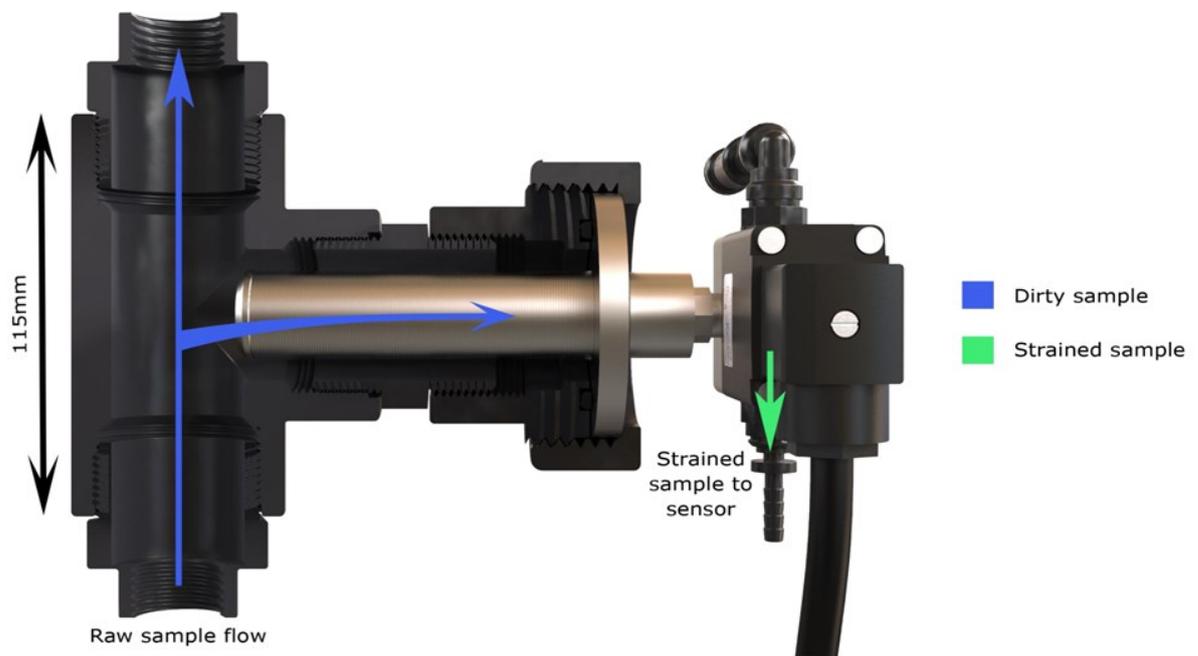


UV254 Sample Strainer Unit - Internal Structure

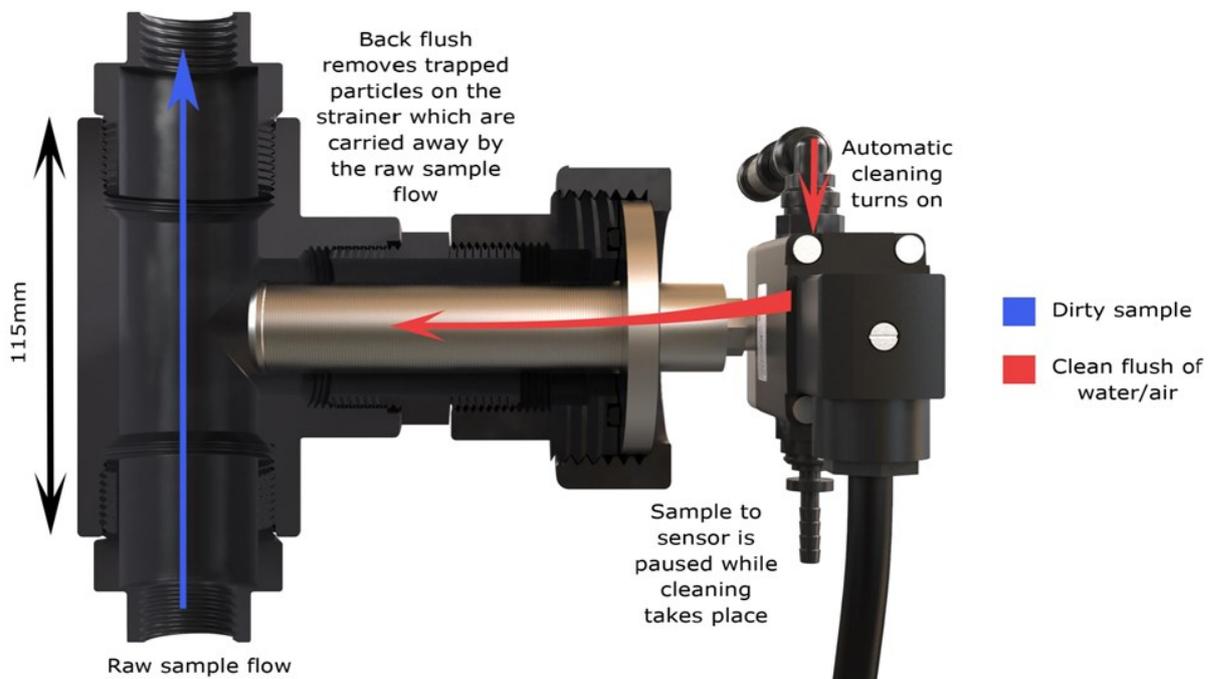
Alternatively, if no relay contact is available in an existing CRONOS®/CRIUS®4.0 installation then the flush cycle can be controlled through a separate solenoid timer. This second installation method means no control signal is required from the controller to the strainer assembly, making installation 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 - Sample Strain (normal operation)



UV254 Sample Strainer Unit - Self Clean Cycle

Specification*

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

**All subject to change without notice*