



# HYDRO-BIOS

## Smart Sampling

### Datasheet AFIS Injection Sampler ( 436 430 )



### Automatic Fluid Injection Sampler AFIS

Novel in situ water sampling and fluid injection system

Microorganisms are the driving catalysts of virtually all biogeochemical cycles on this planet. Therefore, knowledge regarding microbial abundances, diversities and activities in the environment is of fundamental interest not only to microbiologists, but also for understanding globally important element cycles. One cultivation-independent approach to deduce those prokaryotic metabolic functions is to analyse metatranscriptomes.

The Automatic Fluid Injection Sampler AFIS provides a novel technique to enhance sampling technology for studying microbially driven biogeochemical processes in the environment by the analysis of metatranscriptomes (messenger RNA).

Transcripts degrade fast - within seconds to minutes. It is known that their abundance patterns detected in nature are subject to considerable modification not only due to environmental changes but simply as a result of sampling procedures.

## DESCRIPTION

### New Approach

Traditional sampling from a ship using conventional water sampling bottles usually takes many minutes to some hours, providing plenty of time for modification. To overcome this problem, AFIS takes samples and rapidly fixes water directly in the original environment and thereby instantaneously conserves the gene expression profile in situ. This allows a reliable evaluation of microbially driven processes based on metatranscriptomics.

Additional applications are expected in the field of conventional water sampling where immediate fixation of biological matters or chemical substances inside the sample is needed. The single-bottle version AFISsingle has been designed to be operated inside common rosette water sampling systems or as stand-alone instrument when mounted to hydrographic wires or other subaqueous structures like landers, ROVS etc.

The AFIS results from a cooperation with Leibniz-Institute for Baltic Sea Research Warnemuende IOW.



## TECHNICAL DETAILS

<b>length</b>	65 cm
<b>width</b>	20 cm
<b>height</b>	20 cm
<b>sample volume</b>	2 l
<b>weight on air</b>	20 kg (empty)
<b>operational depth</b>	3000 m - optional 6000 m
<b>power supply underwater unit</b>	lithium iron phosphate (LiFePO4), 2500 mAh
<b>product ID</b>	436 430

## CHARACTERISTICS

- **High-pressure injection for fast fixation of the sample within seconds**
- **Optimised injection system for even distribution of injection fluid**
- **User-selectable injection fluid**
- **Pressure-less handling of injection fluid**
- **Programmable volume of injection fluid**
- **Programmable schedule for sampling procedure**
- **For use inside common rosette water sampling systems**