

# HOT GAS SAMPLER AND DILUTER FOR AIRBORNE NANOPARTICLES



## EMISSION SAMPLING SYSTEM (ESS) MODEL 7917

The GRIMM Emission Sampling System (ESS) is designed to sample aerosol particles directly from hot exhaust gas, e.g. from fireplaces, combustion processes or engine exhaust. The sampling probe features an integrated two-stage dilution system. The dilution air of the first dilution stage is preheated, dried and free from particles and organic gases in order to avoid condensation. The second dilution is a cold dilution with particle free air.

The Emission Sampling System consists of:

- A heated sampling probe with integrated diluter
- A second (optional) cold dilution stage
- A control unit for volume flows and temperature settings
- Filter, dryer and charcoal absorber for the dilution air.

The sampling probe ( $\varnothing$  8 mm) is designed for direct connection to stacks. Since both dilution stages employ 9 lpm dilution air, the dilution ratio depends on the volume flow rate of the measuring system. For example, at a sample flow of 1 lpm it equals 1:10 or, if the second dilution stage is used, 1:100. Other dilution ratios are available upon request.

The ESS can be connected to a Scanning Mobility Particle Sizer (SMPS)\* for measuring continuous real-time particle size distributions. The SMPS software offers sophisticated evaluation probabilities, e.g. conversion to emitted mass allows an on-the-spot comparisons with established non-continuous sampling techniques.

\* Please consult our separate data sheets for more information on our SMPS systems



## YOUR BENEFITS

- Sampling from hot gas with temperatures up to 500°C
- Heated sampling probe to prevent particle formation
- Stable and reproduceable dilution ratios
- Optional with one or two dilution stages
- For combination with SMPS systems

## APPLICATIONS

- Characterisation of burners
- Monitoring emissions from domestic heating
- Engine exhaust studies
- Measurements in stacks
- Optimization of burner chambers and combustion processes



CPC

SMPS

UP TO 500°C

DILUTION  
1:10 & 1:100

REAL-TIME

# TECHNICAL DATA

## SPECIFICATIONS

Diameter of sampling probe	Inlet: O.D. 8 mm
Flow Rate of dilution air	9 l/m (both for first and second dilution stage)
Flow control	Critical nozzles with constant temperature
Dilution ratio using a SMPS+E system	
First Stage	1:10 at 1 l/m sample flow
Second Stage	1:10 at 1 l/m sample flow (total dilution ratio 1:100)
Dilution ratio using a SMPS+C system	
First Stage	1:31 at 0.3 l/m sample flow
Second Stage	1:31 at 0.3 l/m sample flow (total dilution ratio 1:961)
Maximum temperature of the heater	200°C
Maximum temperature of the Sample Gas	500°C
Tolerates Pressure	± 100 mbar vs. ambient pressure

This technical data may be subject to change without notice.  
Datasheet\_7917\_ESS\_ENG\_V2p0.pdf

Dealer: