


# Sample Gas Probes Series GAS 222

## A comprehensive range of basis units

- Heated (selfregulating, regulated, steam)
- Unheated
-  Probes for use in hazardous areas according to ATEX Zone 1, 21 or 2 and AMEX Class I Div 2. Some ATEX probes allow gas sampling from Zone 0 and 20.
- In-situ or downstream filters
- Suitable for high dust concentration



## Features

- Easy to operate
- Filter replacement without tools
- Easy to open, self-locking weather shield
- Highly efficient filter cleaning system, blowback reduces cost of ownership
- Effective insulation provides stable temperature and safe operation
- Integrated controls provide good system compatibility.

## Options and accessories

- Various filter materials and retention rates
- Heated/unheated extensions
- Various blowback options and blowback control units



In gas analysis, the sample point is a critical interface between the process and the analysis system. Probes for this harsh and demanding environment must be specially designed. Robust and flexible design provides low operational cost.

The GAS 222 series of probes features a modular design allowing the easy adaptation to application specific requirements. The probe is assembled-to-order and easy to install on-site.

### **Gas probes with downstream filter**

These probes are typically used in low dust applications (approx. 2 g/m<sup>3</sup>). Since no tools are required, the filter element can be replaced in a few minutes.

### **Gas probes with in-situ filter**

These versions feature an in-situ filter located directly in the process stream.

In combination with an effective blowback system, the filter elements can remain in place for a long time, thus providing low cost of ownership due to low maintenance requirements. Various sizes and materials are available, depending on dust concentration and other application-specific parameters.

The blowback system is based on a capacitive vessel which is directly attached to the probe. By actuating a set of solenoid valves, the sample gas stream is cut off for a short time while a large volume of pressurized air is blown counter-current through the filter element. If the application requires, the pressurized air can be heated.

The sequence of the this blowback operation can be set either in the main PLC or is fully controlled by an optional blowback control unit, available either as a stand alone unit or integrated into the probe controller.

The GAS222.35 version combines the advantages of the upstream location of the filter with an easily accessible filter element. This advanced design allows the filter element to be replaced while the probe remains in place. This contributes to lower maintenance cost.

### **Gas probe with combination in-situ/downstream filter**

Some end users prefer to combine the advantages of the in-situ filter with an additional downstream "polishing" filter. One these units, the blowback cleans only the in-situ element.

The downstream filter can be replaced easily without tools.

Send us a detailed inquiry with all parameters of your process and our application experts will custom-design as system for your specific application.

### **Heated and unheated sample gas probes**

In many processes, moisture or vapor is present in the stream as an unavoidable component. Moisture is an undesirable contaminant in an analytical system. Therefore, measures must be taken to keep the moisture in vapor phase. This is typically done by heating the sample probe and the sample lines to keep the gas temperature above the dew point.

Depending on the application, the probes can be electrically heated or steam heated. The electrical heaters can be self-regulated or regulated by means of an electronic controller directly attached to the probe.

### **Gas sampling probes for hazardous areas**

For applications in hazardous areas, heated ATEX and CSA-US/C certified models are available.

These probes are applicable for Zone 1, 21 / Category 2 and Zone 2 / Category 3 and Class I, Div 2, Gps B, C and D. All combinations and blowback options are available. The unheated and the steam-heated probes are suitable for hazardous areas as well.

### **Sample tubes and extensions for sample tubes**

A variety of heated or unheated sample tubes and extensions for sample tubes are available. An optional controller for heated extensions can be integrated into the probe controller.

### **Further options**

Upon request, a comprehensive range of accessories such as special flanges, calibration gas ports, integrated blowback controller, integrated controller for heated extensions are available.

### **Combinations**

To select the appropriate type of sample probe, please read the individual data sheets carefully. Basic features of the base units and all available combinations are detailed in the data sheets.

Data sheet DE461099 contains further important information.

## Data sheets and Probe Finder


Data sheets describe the individual probe models. This information is enhanced by diagrams and drawings. Use the following table, to select the probe that meets your application-specific requirements.

Please contact us to talk to one of our application specialists if you have any questions or would like assistance in designing your sampling system.

### Probe Finder

The table shows some of the most important criteria for selecting a probe and will help you navigate through our comprehensive selection of sampling probes. Once you have selected a particular model, please read the corresponding data sheet (number is indicated) carefully to confirm that all your requirements are met.

Accessories are found in data sheet No. DE 461099.

Dust concentration Filter type	Non hazardous area			 Hazardous area			Process temperature max.
	heated self regulated	heated regulated	unheated	heated, 1GD/2GD sampling from Zone 0, 20 approved for use in Zone 1, 21	heated, 3G sampling form / approved for use in Zone 2	Class I, Div 2	
	max. allowed operating pressure 6 bar / max. probe inlet temperature 200 °C						
up to 2g/m <sup>3</sup> Downstream filter	GAS 222.15 (DE461015)	GAS 222.20 (DE461020)	GAS 222.10 (DE461010)	GAS 222.20 ATEX * (DE461120)	GAS 222.20 ATEX 2 (DE461220)	GAS 222.20 AMEX (DE461520)	1600 °C
	GAS 222.15 ANSI/CSA (DE 461415)	GAS 222.20 ANSI/CSA (DE 461420)	GAS 222.10 ANSI (DE 461410)				
	GAS 222.17 (DE461017)	GAS 222.21 (DE461021)	GAS 222.11 (DE461011)	GAS 222.21 ATEX * (DE461121)	GAS 222.21 ATEX 2 (DE461221)	GAS 222.21 AMEX (DE461521)	
	GAS 222.17 ANSI/CSA (DE461417)	GAS 222.21 ANSI/CSA (DE461421)	GAS 222.11 ANSI/CSA (DE 461411)				
			<u>Steam heated</u> GAS 222.20DH (DE461320)				
			GAS 222.20DH ANSI/CSA (DE 461620)				
> 2g/m <sup>3</sup> In-situ filter		GAS 222.31 (DE461031)	GAS 222.30 (DE461030)	GAS 222.31 ATEX * (DE461131)	GAS 222.31 ATEX 2 (DE461231)	GAS 222.31 AMEX (DE461531)	1000 °C
		GAS 222.31 ANSI/CSA (DE 461431)	GAS 222.30 ANSI/CSA (DE 461430)				
> 2g/m <sup>3</sup> In-situ and downstream filter		GAS 222.21 (DE461021)		GAS 222.21 ATEX * (DE461121)	GAS 222.21 ATEX 2 (DE461221)	GAS 222.21 AMEX (DE461521)	
		GAS 222.21 ANSI/CSA (DE 461421)					
> 2g/m <sup>3</sup> In-situ filter, replaceable without tools		GAS 222.35 (DE461035)	GAS 222.35U (DE461335)	GAS 222.35 ATEX * (DE461135)	GAS 222.35 ATEX 2 (DE461235)	GAS 222.35 AMEX (DE461535)	600 °C
		GAS 222.35 ANSI/CSA (DE 461435)	GAS 222.35U ANSI/CSA (DE461635)				

\*Max. probe inlet temperature 135°C

## **HOW TO ORDER**

**Step 1:** Review the Probe Finder table on the previous page to find a base unit that fits your application.

**Step 2:** Review the data sheet for the model you select. Note the part number.

**Step 3:** Review data sheet DE 461099 to select required accessories to make base unit application-specific.

**Please contact one of our application specialists if you have any questions or would like assistance in designing your sampling system.**

### **Example 1:**

Application has a dust concentration of approx.  $89 \text{ g/m}^3$ , moisture is present, the gas temperature is between  $500^\circ\text{C}$  and  $600^\circ\text{C}$ . It is located in a non hazardous area. The process is not particularly corrosive. Power supply is 230 VAC. Blow back control is from main PLC.

### **Solution:**

According to the Probe Finder (assuming a heated probe is required), three base units could be chosen: GAS 222.31, GAS 222.21 and GAS 222.35.

For ease of maintenance, it is decided to select the GAS 222.35 due to its no-tool filter replacement design. The p/n for the GAS 222.35 heated is 4622235

To complete the order, the probe data sheet DE 461099 has to be consulted: the in-situ filter required is p/n 46222359

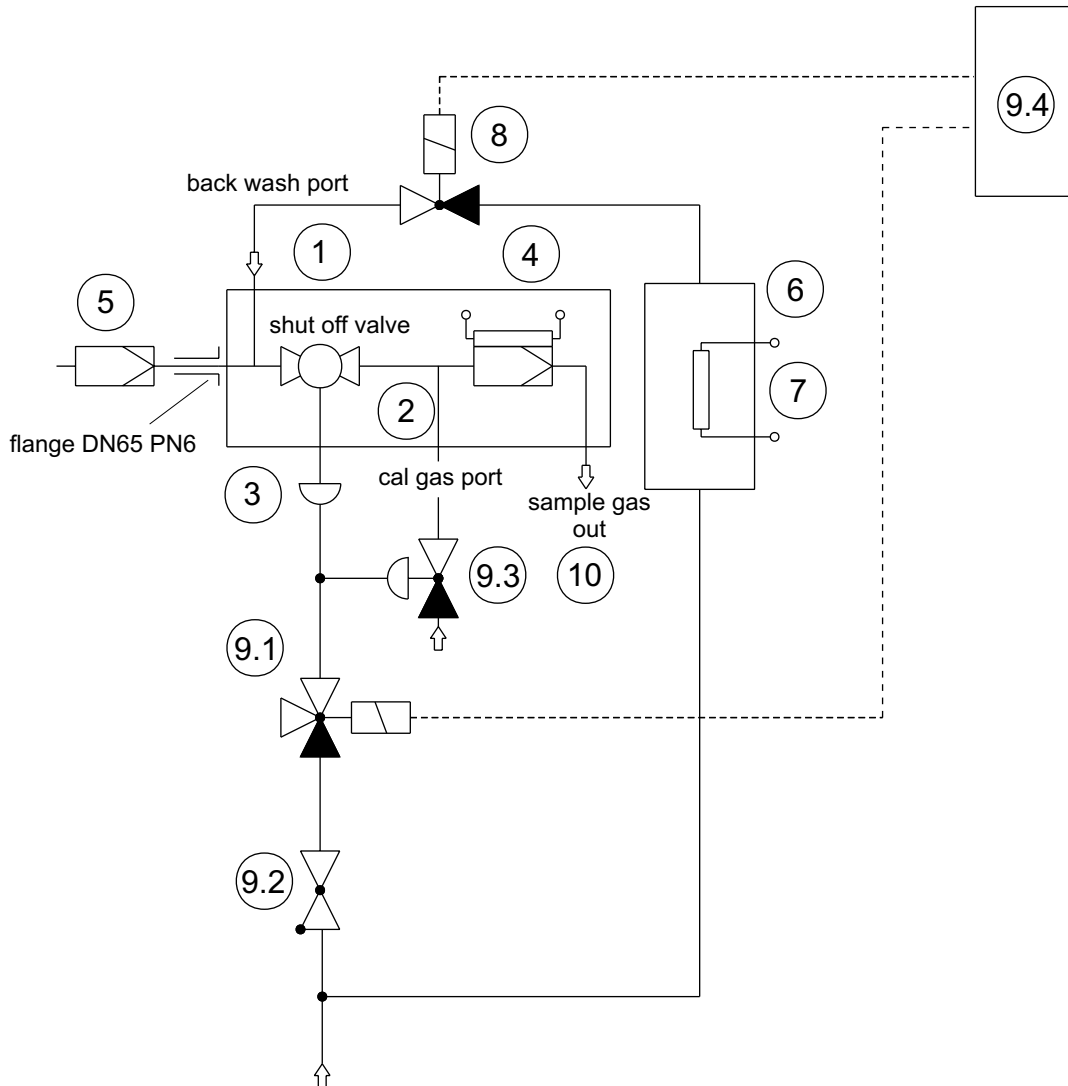
For an effective blowback, the capacitive vessel is recommended: p/n 46222PAV

To control the blowback, one 2/2 way solenoid valve between the capacitive vessel and probe is needed; p/n 46222PAV/MV3.

The complete probe consists of:	p/n 4622235	1 piece
	p/n 46222359	1 piece
	p/n 46222PAV	1 piece
	p/n 46222PAV MV3	1 piece*

\*We assume that the sample line is shut off during blowback within the sample conditioning system.

**Example 2:  
GAS 222.21 with automatic blowback and control**



Application similar to Example 1, extraction temperature around 600°C. Dust concentration is certainly above 10g/m<sup>3</sup> and unpredictable. Therefore a large filter element should be applied and a last chance filter is recommended. Blowback control is by main PLC.

	<b>Data sheet</b>	<b>Part.-no.:</b>
1) Sample gas probe GAS 222.21	DE461021	4622221
2) Cal gas connection	DE461099 page 6	46222309
3) Pneumatic actuator for the ball valve	DE461099 page 4	46222008
4) Downstream filter	DE461099 page 6	46222010
5) In-situ filter	DE461099 page 2	46222303
6) Capacitive vessel	DE461099 page 4	46222PAV
7) Self regulated heating systemq	DE461099 page 4	46222PAVHZ1
8) 2/2 way solenoid valve for recommended pressurized air	DE461099 page 4	46222PAVMV3
9) Control unit the back purged probe:		
9.1) 3/2 way solenoid valve for pneumatic actuator		
9.2) Check valve		on request
9.3) Calibration gas port		
9.4) Junction box for solenoid valves		
10) Fitting for sample gas port	DE461099 page 6	9026172