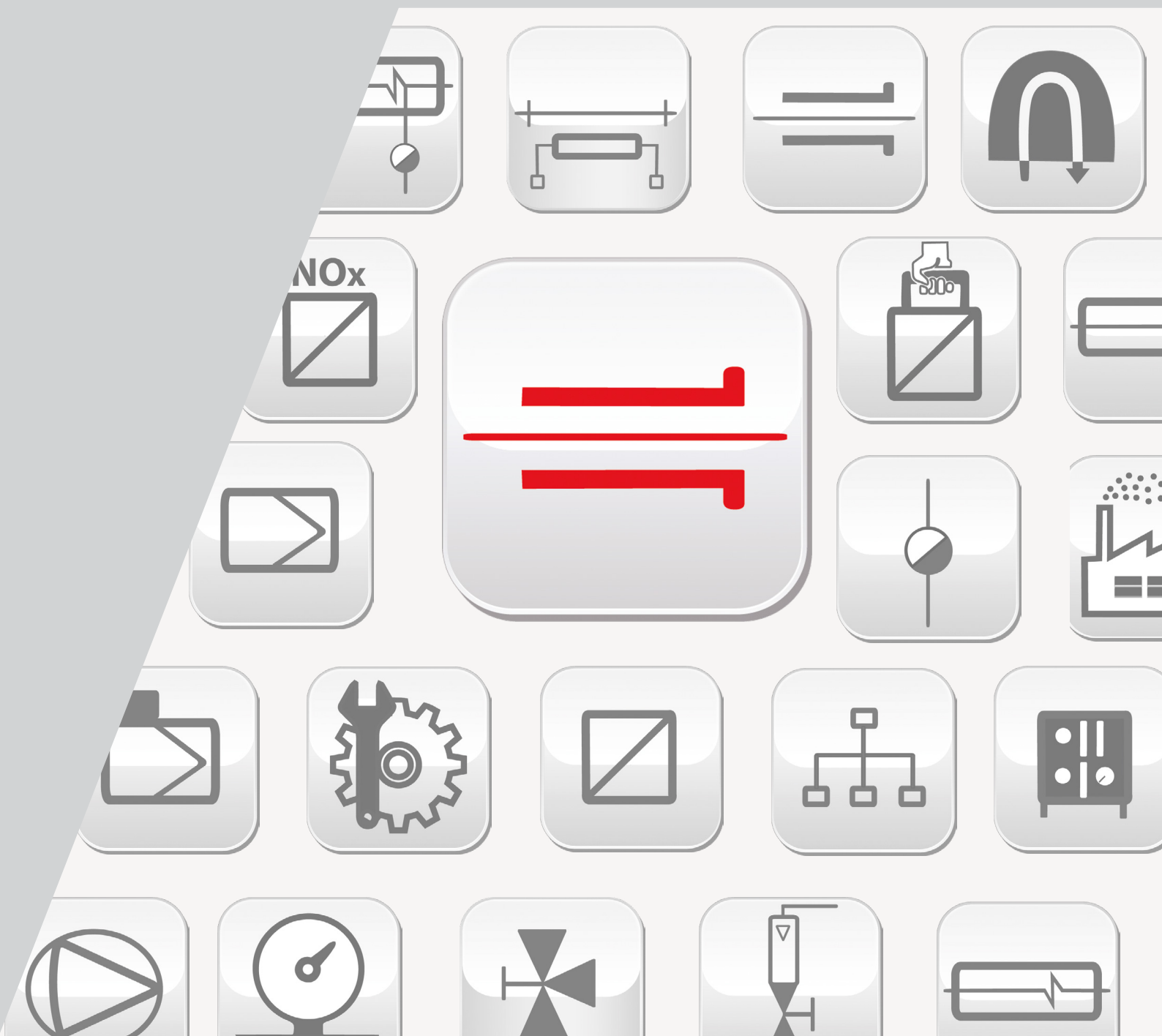




V09.26



SAMPLE GAS PROBES



COMPONENTS FOR SAMPLE GAS CONDITIONING

SAMPLE GAS PROBES FORM THE INTERFACE BETWEEN THE PROCESS AND THE ANALYTICAL SYSTEM. THEY ARE DESIGNED TO EXTRACT THE SAMPLE GAS FROM THE PROCESS STREAM WITHOUT ALTERING ITS COMPOSITION AND TO TRANSPORT IT RELIABLY TO THE ANALYTICAL SYSTEM.

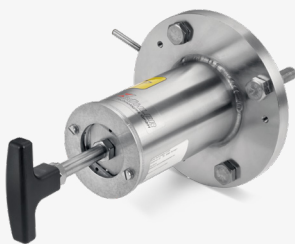


By incorporating highly effective filter elements, particulate contaminants entrained in the sample gas are removed directly within the probe. Depending on the process conditions, heated versions are available to prevent unwanted condensate formation at the sampling point. Effective insulation also prevents thermal bridging.

Depending on the model series, our Sample Gas Probes offer outstanding features such as highly efficient cleaning by back-purging and simple, tool-free maintenance that can be carried out with one hand. Appropriate electrical protection ratings ensure safe operation in potentially explosive atmospheres. Weather protection devices also enable the sample gas probes to be used reliably under adverse environmental conditions.

1. SAFE AREA

1.1 Unheated Sample Gas Probes



PROBE GAS 222.10



PROBE GAS 222.11



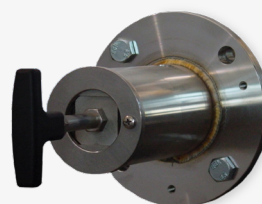
Gas 222.10



Gas 222.11



PROBE GAS 222.30



PROBE GAS 222.35-U



Gas 222.30



Gas 222.35-U



1.2 Self-regulating heated Sample Gas Probes (T_{Heat} : 180°C)



PROBE GAS 222.15



PROBE GAS 222.17



Gas 222.15



Gas 222.17

1.3 Temperature-Controlled Sample Gas Probes (T_{Heat} : 50-200°C)



PROBE GAS 222.20



PROBE GAS 222.21



Gas 222.20



Gas 222.21



PROBE GAS 222.31



PROBE GAS 222.35



Gas 222.31



Gas 222.35

2. HAZARDOUS AREA

Depending on the risk assessment and the region, application areas are classified into zones or divisions. By adapting the construction and design in accordance with the relevant directives for use in hazardous areas, safe operation can be ensured without compromising the advantages of the Sample Gas Probes, such as easy filter replacement and back-purging of the inlet filter. This enables low-maintenance operation even in hazardous areas.

ALL SAMPLE GAS PROBES ARE AVAILABLE FOR EX ZONE 1 OR ZONE 2 APPLICATIONS.



EX1 Probes

2.1 Unheated Sample Gas Probes



PROBE GAS 222.11



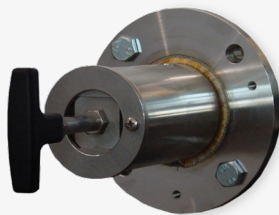
PROBE GAS 222.30



Gas 222.11



Gas 222.30



PROBE GAS 222.35-U



Gas 222.35-U

2.2 Self-Regulating Heated Sample Gas Probes (T_{Heat} : Ex2: 120 °C, Ex1: 90 °C)



PROBE GAS 222.20 EX2



PROBE GAS 222.21 EX2



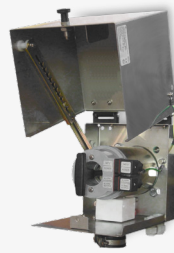
Gas 222.20 Ex2



Gas 222.21 Ex2



PROBE GAS 222.31 EX2



PROBE GAS 222.35 EX2



Gas 222.31 Ex2



Gas 222.35 Ex2

2.3 Self-regulating heated Sample Gas Probe for Class I, Division 2 ($T_{\text{Heat}}: 130^{\circ}\text{C}$)



PROBE GAS 222.20 AMEX



Gas 222.20 Amex

3. SPECIAL APPLICATIONS

Gas analysis is an essential part of a wide range of processes and applications. The characteristics of the process to be monitored and the location of the installation determine the operating conditions at the sampling point of the sample gas to be analysed.

For this reason, all probes from our standard product range can be supplied with an optional glass coating to achieve a long service life, even when handling highly corrosive sample gases. Listed below is a selection of Sample Gas Probes for specialised applications, where extensive modifications have been made to the probe design. Custom adaptations to meet specific customer requirements are available on request.

3.1 For Maritime Applications

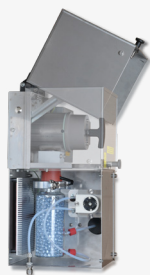


PROBE GAS 222.15-MA



Gas 222.15-MA

3.2 For NO_x Removal



PROBE GAS 222.20 DENOX



Gas 222.20 Denox

3.3 For High-Temperature Applications (T_{Heat} : 280 °C)



PROBE GAS 222.20-HT



Gas 222.20-HT

4. *USEFUL INFORMATION*

The key criteria for selecting a suitable Sample Gas Probe are the heating requirements and the expected dust or particulate loading in the process stream.

HEATING:

If the process stream is hot, it will generally contain moisture in the form of water vapour in addition to all other components. In extractive gas analysis, however, there is usually a considerable distance between the sampling point and the analyser system.

To prevent premature condensation and, consequently, not only corrosion of wetted components but, above all, distortion of the measurement results, both the Sample Gas Probe and the connected sample gas line must be heated.

The key parameter for determining the required heating capacity is the dew point of the sample gas, which should not be allowed to fall below its value at any point between the sampling point and the analyser system.

PARTICULATE LOADING:

To remove particulate matter from the sample gas, filters are used. For dust loads of up to 2 g/m^3 , an outlet filter installed in the probe is sufficient to achieve adequately long maintenance intervals.

The outlet filter is easily accessible and can be replaced quickly and conveniently without the use of tools. For higher dust loads, inlet filters are used and installed in situ within the process. A back-purge control system cleans the filter at predefined intervals by applying a pulse of compressed air in the direction opposite to the filtration flow.

The effectiveness of the cleaning process is significantly influenced by the ratio of the compressed air reserve (determined by the pressure and volume of the storage vessel) to the volume of the filter element. This relationship must therefore be taken into account when selecting the filter element.

The back-purge vessel can also be fitted with heating. If required, an outlet filter can be installed as an additional safety feature.

MAINTENANCE:

Particularly in emissions monitoring applications, sample gas extraction points are often installed in locations that are difficult to access, making maintenance more challenging. For this reason, it is important both for the safety of maintenance personnel and for minimising operating costs that no loose parts need to be removed during servicing and that filter replacement can be carried out without the use of tools.

The design of our probes has been optimised for simple and convenient maintenance. The weather protection cover is hinged and remains securely in the open position, while filter replacement is performed by a simple twist-and-pull movement of the handle. This reduces the risk of burns caused by awkward handling procedures.

GLASS COATING:

For particularly aggressive sample gas compositions, a glass coating can help make wetted parts more resistant to chemical corrosion. The SilcoNert® 2000 coating forms a layer of hydrogenated amorphous silicon on the wetted surfaces of the Sample Gas Probe. It is applied by means of Chemical Vapour Deposition (CVD), creating a uniformly thin coating across the entire surface.

SilcoNert® 2000 is temperature-resistant up to 400°C , chemically inert and hydrophobic. This makes it ideally suited for use in Sample Gas Probes and, upon request, is available for all Sample Gas Probes intended for use in non-hazardous areas.

SAMPLE GAS PROBES



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