# ANKERSMID Sample tubes - unheated

## for sample probes series ASP 1xx/3xx/4xx/5xx/6xx

* Pictures may vary

### Application

These sample tubes are used in combination with the Ankersmid ASP probes in order to sample the gas in the optimal section of the gas-stream. For a typical installation of the probe-tip, a position in the middle third of the gas stream is advised.
For dust concentrations higher than 2g/m³, we advise fitting a pre-filter in combination with an extension tube.

### Description

Ankersmid sample tubes are selected according to specific applications. Influencing process parameter are the gas composition, water vapure saturation, dust loading, process temperature, pressure and the gas velocity.
Among the standard length (typically 1m) other lengths are available on request.
Sample tubes/extension tubes with volume displacers are available for applications with low sample gas flow to decrease the retention time.
For gas sampling downstream a wet scrubber with a high content of water the demistor tube ADT, equipped with an integrated demister for liquid drop collection, as available.
The connection thread enables an easy mounting to the gas sample probes.

- **Used for dust loading up to 2g/m3**
- **Sampling after wet scrubber up to 90°C**
- **Sampling gases up to max. 1400°C**
- **Different materials**
- **Available in lengths up to 2500mm, others on request**

### Additional sampling accessories

For high dust loading:
Top-filter series ATF

For lower deviation of dew point on process side:
Heated sample tubes series AST 05x, AST 10x, AST 15x, AST 20x

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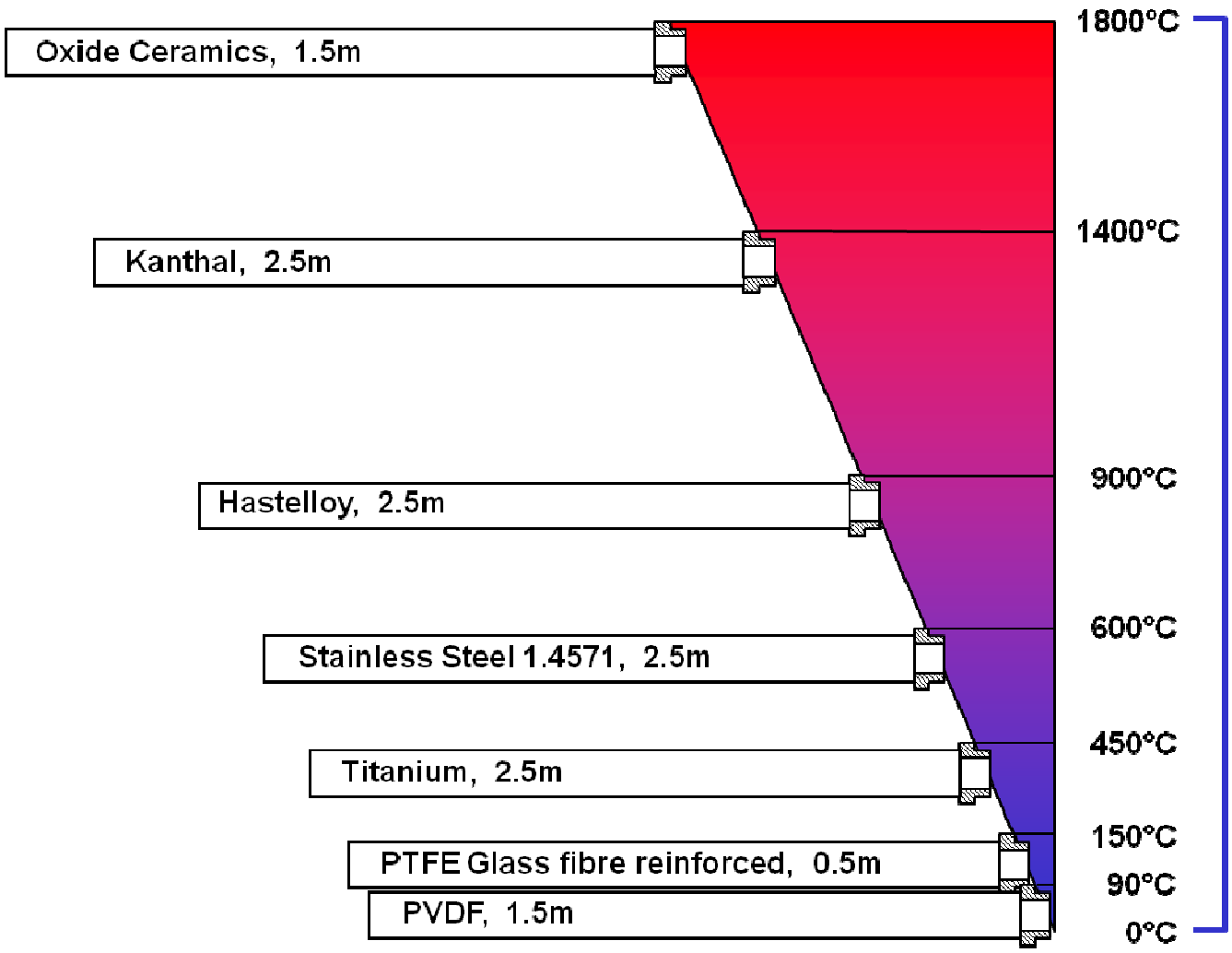



Maximum sample tube temperature is depending on the horizontal length inside this temperature zone

| Application | Tube type | Max. T [°C] | Material | Connection | Outer diameter |
|---|---|---|---|---|---|
| After wet scrubber or high dew point | ADT 080 (Demistor tube) | 90°C | PTFE | G ¾"o | 40-70 |
| Temp < 150°C | AST 411-412- 413 | 150°C | PTFE | G ¾"o | 22 |
| Temp < 600°C | AST 051- 404 | 600°C | SS316 | G ¾"o | 22 |
| Temp < 900°C | AST 431-432-433-434 | 900°C | Hastelloy C® | G ¾"o | 22 |
| Temp < 1400°C | AST 435 | 1400°C | Kanthal® | G ¾"o | 20 |
| HCl or high corrosive gas | AST 421-422-423-424 | 450°C | Titanium | G ¾"o | 22 |

# ANKERSMID Sample tubes - heated

AST 05x/10x/15x/20x series

## Application

The electrically heated Ankersmid sample probe tube AST 05x-10x-15x-20x are used in extractive sampling systems to avoid cooling and condensation of the sample.
Condensation, in combination with a high dust load, can result in blockage of the probe. This is to be strictly avoided as sample gases may be absorbed into the condensate after cooling and will be undetectable. An extra stainless filter can be mounted on top of the tube in case of very high dust levels (> 10 g/m³).

## Description

This electrically heated sample tube is available in 4 standard lengths:
0.5, 1, 1.5 and 2.0 meter (other lengths on request).
As for all Ankersmid probes, the standard flange is a DN65 PN6. Adapter flanges for most common process connections can be provided if required.
If needed, it is possible to affix a non-heating sample probe or pre-filter to the tip of the heated tube.
Inside the sample tube a thermocouple type J (Fe-CuNi) is integrated. As a standard it is installed in combination with the digital controller, the user has a freely programmable set point and alarm.

Optional available is a 2-way Modbus/ RS485 communication that combines signals from all installed Ankersmid controllers, so that digital communication with the control room is possible.

- **Different lengths available**
- **Completely heated sample tube**
- **Digital controller**
- **Easy mounting**
- **Optional: Modbus/RS485**

## Additional sampling accessories

For high dust loading:
Top-filter series ATF

# ANKERSMID Sample tubes - heated

## Technical data

AST 05x/10x/15x/20x series

| Series AST Type | AST05x | AST10x | AST15x | AST20x |
|---|---|---|---|---|
| **Temperature sensor & controller (additional part number)** | | | | |
| **AST 001** | Incorporated capillary temperature controller | | | |
| **AST 002** | Temperature sensor thermo-couple type J (Fe-CuNi) | | | |
| **AST 004** | Temperature sensor thermo-couple type J (Fe-CuNi), including integrated electronic controller with high/low alarm | | | |
| **RS 485 / Modbus interface** | Optional | | | |
| **Probe tube length L1** | 500mm | 1000mm | 1500mm | 2000mm |
| **Sample temperature max.** | 500°C | 500°C | 450°C | 400°C |
| **Operating temperature max. (pre-adjusted at 180°C)** | 200°C | 200°C | 200°C | 200°C |
| **Pre-filter** | Optional | | | |
| **Sample gas inlet connection** | G3/4"i | | | |
| **Dust loading** | max. 2 g/m3 | | | |
| **Probe tube volume** | 200ml/m | | | |
| **Sample pressure max.** | 5 bar g | | | |
| **Ambient temperature** | -20°C to +70°C | | | |
| **Storage temperature** | -30°C to +70°C | | | |
| **Ready for operation** | Approx. 0,5h | | | |
| **Power supply** | 230VAC, 500W<br>115VAC, 500W | 230VAC, 800W<br>115VAC, 800W | 230VAC, 1200W<br>115VAC, 1200W | 230VAC, 1500W<br>115VAC, 1500W |
| **Electrical connection** | 2 x 2.5mm² + 2.5mm² | | | |
| **Electrical standard** | EN 61010, EN60519-1 | | | |
| **Degree of protection** | IP54 EN 60529 | | | |
| **Mounting flange** | DN65 PN6 | | | |
| **Material of gas wetted parts** | Stainless steel 316 | | | |

# ANKERSMID Sample tubes - heated

## AST 30x series – for portable heated sample probes

### Application

The electrically heated portable sample probe tubes series AST 30x are used in extractive portable sampling systems to avoid cooling and condensation of the sample.
Condensation, in combination with a high dust load, can result in blockage of the probe. This is to be strictly avoided as sample gases may be absorbed into the condensate after cooling and will be undetectable. An extra stainless filter can be mounted on top of the tube in case of very high dust levels (> 10 g/m³).

### Description

This electrically heated sample tube is available as standard with 1m length (other lengths on request).
To fit all portable Ankersmid probes, the heated tube has a G3/8”m thread connection.
If needed, it is possible to affix a non-heating sample probe or pre-filter to the tip of the heated tube.
A capillary switch controller is included to adjust the operating temperature up to max. 200°C.

- **Different lengths available**
- **Completely heated sample tube**
- **Integrated capillary controller**
- **Easy mounting**
- **Especially for portable applications**

### Additional sampling accessories

For high dust loading:
Top-filter series ATF

# ANKERSMID Sample tubes - heated

## Technical data

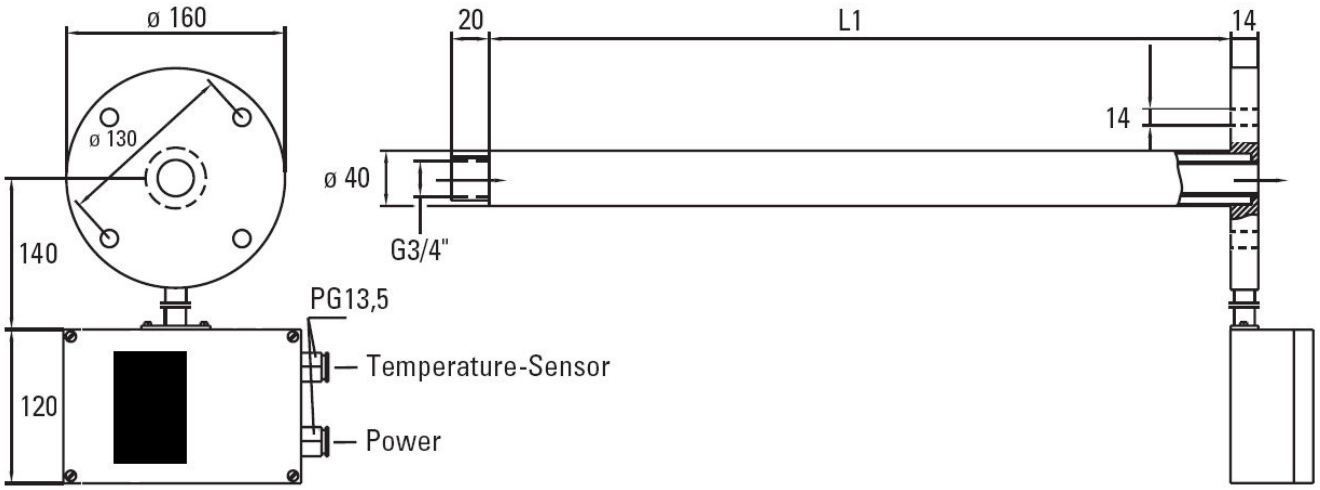
AST 30x series – for portable heated sample probes

| Series AST Type | AST 301 |
|---|---|
| **Temperature controller** | Capillary switch controller |
| **Probe tube length L1** | 1000mm (others on request) |
| **Sample temperature max.** | 500°C |
| **Operating temperature max.** | 200°C |
| **Pre filter optional** | Option |
| **Sample gas inlet connection** | G3/8"i |
| **Dust loading** | max. 2g/m3 |
| **Probe tube volume** | 20ml/m |
| **Sample pressure max.** | 5 bar g |
| **Ambient temperature** | -20 °C to +70 °C |
| **Storage temperature** | -30 °C to +70 °C |
| **Ready for operation** | Approx. 1h |
| **Power supply** | 230VAC, 500W (115VAC, 500W on request) |
| **Electrical connection** | 2 x 1.5mm² + 1.5mm² |
| **Electrical standard** | EN 61010, EN60519-1 |
| **Degree of protection** | IP54 EN 60529 |
| **Outlet connection** | G 3/8”m |
| **Outer diameter** | 28mm |
| **Material of gas wetted parts** | Stainless steel 316 |

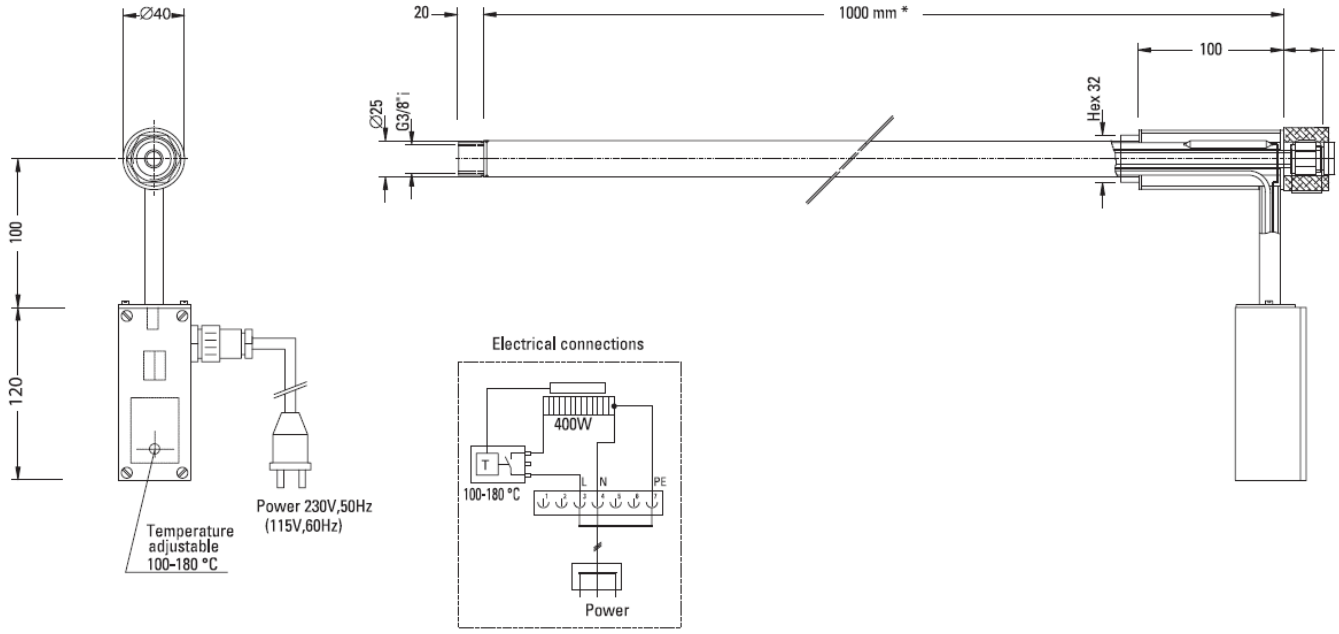
# ANKERSMID Sample tubes - heated

## Dimensions

AST 05x/10x/15x/20x series




AST 30x series – for portable heated sample probes



# ANKERSMID Top-Filter

## ATF 18x/50x series

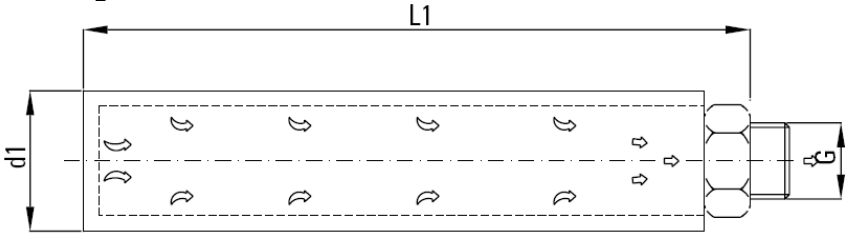
### Application

The Ankersmid top-filters are used together with gas sample probes series ASP for continuous gas sampling in processes with increased dust loading. These extra stainless filters can be mounted on top of the sample tubes in case of very high dust levels (> 10 g/m³).

### Description

The large active surface of the Ankersmid top-filter guaranties a long operating time. Even in case the flow rate of the sample gas is increased, there is only a small difference pressure on the filter matrix between clean gas and crude gas side.
Therefore, the solid particles do not get into the filter's pore structure. They are deposited as filter cake on the filter's surface and cause a prolonged operating time in its property as top-filter.
The Ankersmid top-filters series ATF are selected according to the specific application.
The basis for selection are the process parameters, i.e. the gas compounds, dust loading, grain sizes, water vapor saturation, temperature, pressure and gas velocity.
The ATF-filter are equipped with a welded thread connector for mountage into the mounting flange of the gas sample probe.
For an optimal sampling position in the process, the top-filters can be mounted to the sample probe via an extension tube series AET. In case of a high velocity of the process gas, shape protection plates series AAS are used in order to protect the top-filters against abrasion.

- **For dust loading >2g/m3**
- **Sampling temperature up to max.600°C**
- **Different dimensions**
- **Great filter surface**
- **back-purging possible**
- **Easy mounting**




| ATF Top-filter type | Tmax | Material Filter connection | Filter Porosity µm | Dust content g/m³ | Internal volume displacer | Back-purging possible | Filter length L1 (mm) | Filter diameter D1 (mm) | Filter connection G |
|---|---|---|---|---|---|---|---|---|---|
| **ATF 180** | 600°C | SS316 | 5 | 2 - 10 | No | Yes | 180 | 40 | ¾"m |
| **ATF 181** | 600°C | SS316 | 5 | 2 - 10 | Yes | Yes | 180 | 40 | ¾"m |
| **ATF 050** | 600°C | SS316 | 5 | > 10 | No | Yes | 500 | 40 | ¾"m |
| **ATF 051** | 600°C | SS316 | 5 | > 10 | Yes | Yes | 500 | 40 | ¾"m |