

# Product Group Gas Sample Tubes.

Product Category Gas Sampling.





PSP4000-H /C /T

## Portable Gas Sample Probe

PSP4000-H/C/T

### Special Features

- **Lightweight design, easy to handle and compact construction**
- **Electrically heated – adjustable from 100 to 180 °C [212 to 356 °F]**
- **With integrated microfilter**
- **Variable sample tube and connection technique**
- **Integrated temperature measurement**
- **Gas sampling also with heated sample tube**

### Application

Previously, gas sample probes designed for stationary applications had to be used for inspection measurements at different locations. The weight and bulkiness of such units often caused problems for technicians conducting mobile measurements.

Now the light, handy and heated gas sample probe PSP4000-H has been developed as a logical complement to the portable M&C sample gas conditioning systems. Despite its compact design, the unit guarantees a full range of functions. Optionally, the process temperature at the end of the sample tube can be measured by an integrated temperature sensor parallel to the gas sampling. To prevent the temperature from falling below the dew point in the sampling area, a heated sample tube SP34-H (see data sheet "Electrically Heated Sample Probe Tube Series SP®, Version SP34-H for portable gas sample probe PSP4000-H") is available.

With the PSP4000-H/C/T version, temperature measurement during gas sampling is performed by an integrated temperature sensor Fe-CuNi that is adjustable in length.

In combination with the gas sample probe PSP4000-H, a specially assembled heated sample line PSP4M4/6 with replaceable PTFE tube or PSP4M4/6-W with additionally smaller outer diameter is offered. The electrical supply of the probe is then ensured via the power line integrated into the sample line. An aluminium-framed case is optionally available for the safe transport of the probe and the up to 5 m long PSP4M4/6 or the up to 8 m [≈ 26.25 ft] long PSP4M4/6-W heated sample line.

### Description

The portable gas sample probe PSP4000-H is electrically heated. Temperature controlling is ensured by an integrated capillary sensor thermostat, adjustable from 100 to 180 °C [212 to 356 °F]. When the operating temperature is reached, an indicator light extinguishes and then flashes during the temperature control cycle. The thermally insulated housing is equipped with a carrying handle and a chain for in-situ attachment. The integrated ultrafine filter element with 2 µm filter porosity reliably retains the contamination of solid particles and is easy to change in just a few simple steps. For heavy-oil furnace measurements, a stainless steel filter wool receptacle FW is optionally available.

The wide and versatile range of sample tubes with diameters from 6 to 12 mm, adapters and thread fittings allows adaptation to the most varied local circumstances.

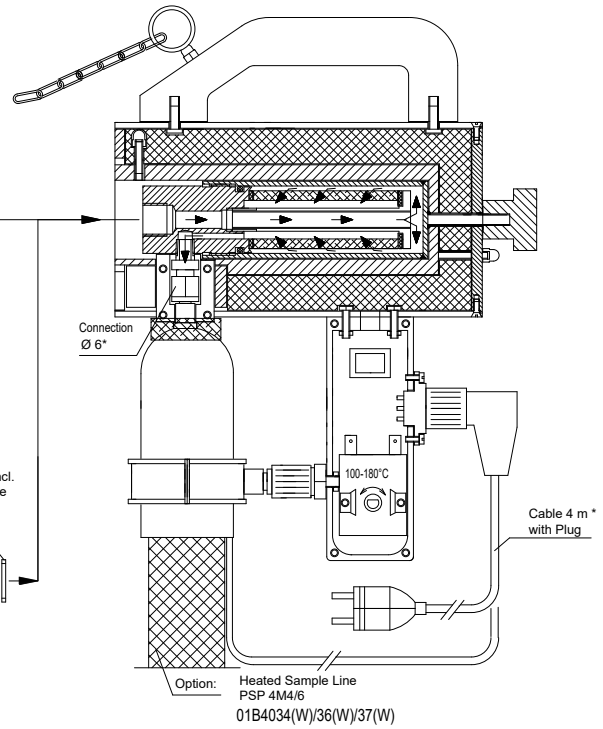
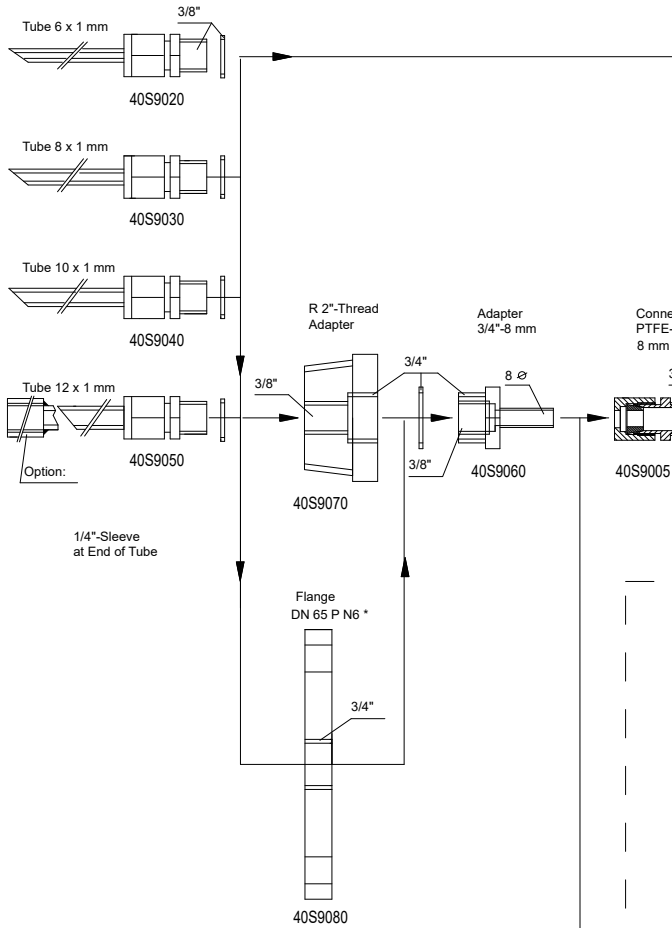
The version PSP4000-H/C allows calibration gas feeding into the probe without dismantling the probe.

Sampling Options

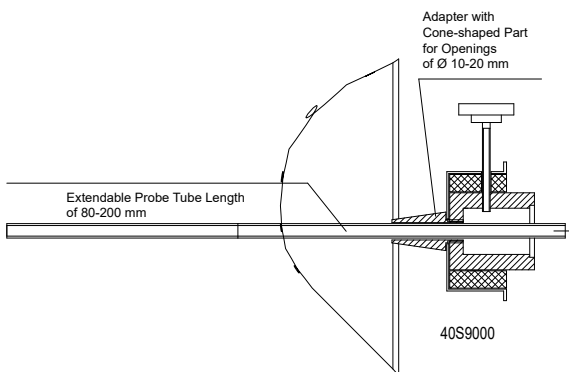
Basic Version PSP4000-H

40S1000

Sample Tubes incl.  
Connector  
Length: 1 m \*  
Material: SS316



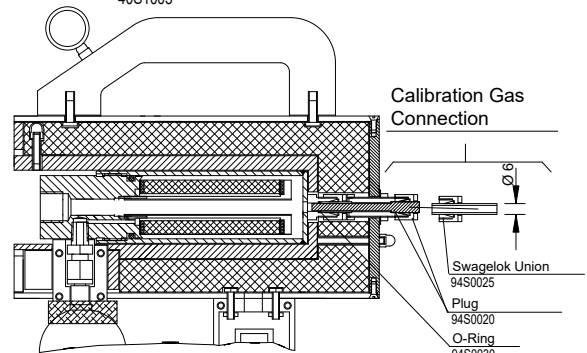
Adapter for Extensible Probe Length  
Tube 8 x 1 mm, Material: SS316



\* Standard

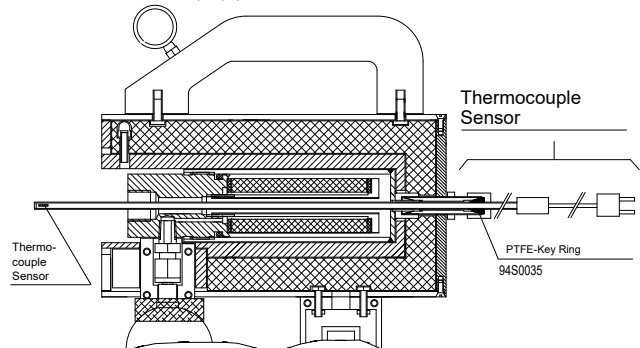
PSP4000-H/C

40S1005



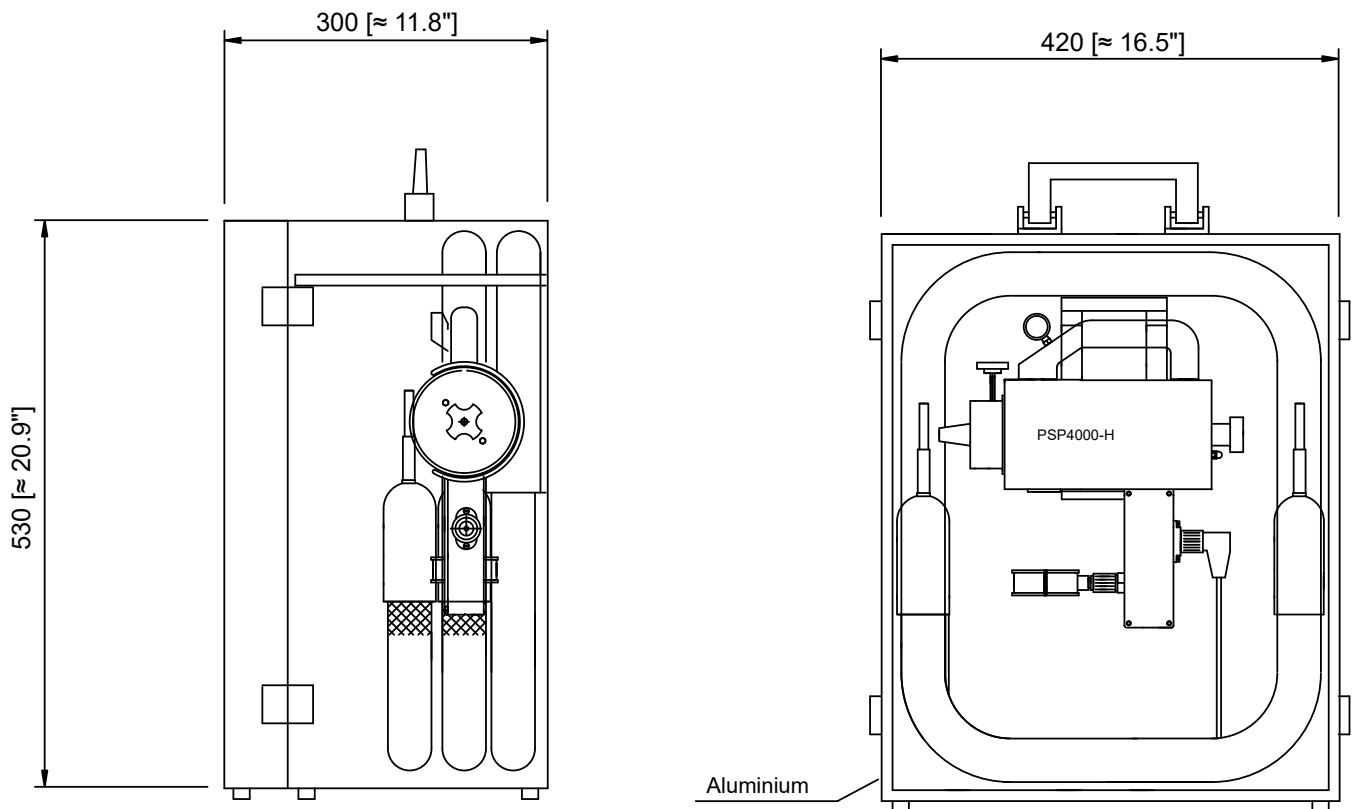
PSP4000-H/C/T

40S1015



Probe Series SP® Portable Version PSP4000	PSP4000-H	PSP4000-H/C	PSP4000-H/C/T
Part No. 230 V	40S1000	40S1005	40S1015
Part No. 115 V	40S1000a	40S1005a	40S1015a
Sample temperature	Max. 600 °C [1112 °F] *standard		
Sampling pressure	Max. 1 bar		
Ambient temperature	-20 to +60 °C [-4 to 140 °F]		
Filter chamber volume	40 cm <sup>3</sup>		
Filter element	S-2K ceramic, 2 µm		
Probe temperature	Adjustable between 100 to 180 °C [212 to 356 °F], pre-set at works to 180 °C [356 °F]		
Ready for operation	After approximately 30 minutes		
Gas inlet	Basic connection G 3/8" i, sample tubes optional		
Gas outlet	1/8" NPT + tube connector 6 mm (8 mm optional) and tube clamp to attach the heated sample line		
Electrical power supply	220-240 V, 50/60 Hz, 200 W or 115 V, 60 Hz		
Electrical connection	Plug and socket connector 7-pole with 4-meter [≈ 13.1 ft] connection cable		
Electrical equipment standard	EN 61010, EN 60519-1		
Type of housing protection	IP40 EN 60529 (starting from Part No. 1907XXX IP42, EN 60529)		
Material	Stainless steel 316Ti, ceramic, FKM		
Weight	3.5 kg [≈ 2.2 lbs]		
Calibration gas connection for SS tube/plastic tube ø 6 mm	No	Yes	Yes
Temperature measurement with thermocouple sensor FeCuNi, length: 600 mm [≈ 23.6"], with 4 m [≈ 13.1 ft] connection cable and standard plug	No	No	Yes

## Dimensions



Dimensions in mm [Inches]

Part No.	
40S9130	Extra charge for PSP4000-H with $\varnothing$ 8 mm tube connector in the sample gas outlet
40S9100	Extra charge for PSP4000-H/FW with stainless steel filter wool receptacle including glass wool filling, filter S-2K not included, connection M 12, material: SS 316Ti
<b>Sample adapter with variable sample tube length:</b>	
40S9005	Adapter fitting 3/8" with gasket and 8 mm PTFE sealing ring
40S9000	Adapter with cone transition for openings of $\varnothing$ 10 to 20 mm and $\varnothing$ 8 mm sample tube out of SS 316Ti, extendable from 80 to 200 mm. [ $\approx$ 3.1" to 7.9"]
40S9010	Sample tube $\varnothing$ 8 mm with position mark, for extendable probe length from 190 to 300 mm [ $\approx$ 7.5" to 11.8"]
<b>Fixed sample tubes for PSP4000 with male connector G 3/8", length: 1 m [<math>\approx</math> 3.3 ft]:</b>	
40S9020	Material: stainless steel SS 316Ti, $\varnothing$ 6 mm OD, max. 600 °C [1112 °F]
40S9030	Material: stainless steel SS 316Ti, $\varnothing$ 8 mm OD, max. 600 °C [1112 °F]
40S9040	Material: stainless steel SS 316Ti, $\varnothing$ 10 mm OD, max. 600 °C [1112 °F]
40S9050	Material: stainless steel SS 316Ti, $\varnothing$ 12 mm OD, max. 600 °C [1112 °F]
40S9108	Material: Titanium, $\varnothing$ 6 mm OD, max. 400 °C [752 °F]
40S9109	Material: Hastelloy® C, $\varnothing$ 6/8 mm OD, max. 900 °C [1652 °F]
40S9112	Material: Inconel® 625, $\varnothing$ 12 mm OD, max. 1200 °C [2192 °F]
40S9106	Material: Kanthal®, $\varnothing$ 15 mm OD, max. 1300 °C [2372 °F]
40S9113	Material: Silicon nitride-ceramic, $\varnothing$ 12.5 mm OD, max. 1400 °C [2552 °F]
40S9110	Material: Ceramic, aluminium oxid <sup>1)</sup> , $\varnothing$ DN 12/8, max. 1800 °C [3272 °F], for mounting tube adapter PSP4000H/AO, Part No. 40S9111 is necessary
40S9111	Support tube adapter PSP4000H/AO, with 3 O-rings and 1 gasket, material: stainless steel SS 316Ti
<b>Heated sample tubes SP34-H (data sheet 2.19):</b>	
40S9115	Heated sample tube SP34-H with integrated thermostat
40S9120	Heated sample tube SP34-H1.1 with thermocouple sensor FeCuNi
40S9125	Heated sample tube SP34-H2 with PT100 sensor
<b>Pre-filter SP1</b>	
04S5000	Pre-filter SP1/SS3, OD: 30 mm, length: 150 mm [ $\approx$ 5.9"], filter porosity: 3 $\mu$ m, material: SS 316/316Ti, connection 1/4" NPT o
04S5010	Pre-filter SP1/SS20, OD: 30 mm, length: 150 mm [ $\approx$ 5.9"], filter porosity: 20 $\mu$ m, material: SS 316/316Ti, connection 1/4" NPT o
40S9054	Screw-on connector with female thread for sample tube 12 mm for mounting SP1, material: SS 316Ti, max. 600 °C [1112 °F]
<b>Accessories made of SS 316Ti for stationary probe installation:</b>	
40S9060	Intermediate connection adapter G 3/4"o - G 3/8" i, $\varnothing$ 8 mm, for further adaptation possibilities, with gasket 3/4"
40S9070	Thread nipple R2" with G 3/4" i and G 3/8" i for mounting the probe in R2" thread adapter, material: SS 316Ti
40S9080	Flange DN 65 PN 6 B with thread connection G 3/4" for mounting the probe to the flange nozzle (other flange sizes on request)
90S2075	Flange gasket set for DN 65 PN 6 B, consisting of gasket (67) and screw set M 12 x 60
<b>Heated sample line PSP4M4/6 specially designed for probe PSP4000H:</b>	
01B4034	Connection fitting type I for heated sample line PSP4M4/6 with 1.5 m [ $\approx$ 4.9 ft] connection cable and 7-pole plug with integrated power supply for PSP 4000
01B4037	End fitting type K for heated sample line PSP4M4/6 with tube stub on the probe side and 0.5 m [ $\approx$ 1.6 ft] connection cable axial to the rear, with 7 pole-plug
01B4036	Electrically heated sample line PSP4M4/6 with replaceable PTFE tube DN 4/6, 230 V/50 Hz, SS tube stub on the probe side, max. temperature: 200 °C [392°F], price per meter
01B4034W	Connection fitting type I for sample line PSP4M4/6-W with corrugated hose for replaceable PTFE tube DN 4/6, power: 230 V/50 Hz, 110 W/m, and 1.5 m [ $\approx$ 4.9 ft] connection cable with 7-pole plug, integrated power supply for PSP4000
01B4037W	End fitting type K for sample line PSP4M4/6-W with corrugated hose for replaceable PTFE tube DN 4/6, tube stub on the probe side, 0.5 m [ $\approx$ 1.6 ft] connection cable axial to the rear, with 7-pole plug
01B4036W	Electrically heated sample line PSP4M4/6-W with replaceable PTFE tube DN 4/6, 230 V/50 Hz, tube stub out of stainless steel on the probe side, outer jacket: corrugated hose, max. temperature: 200 °C [392°F], price per meter
40S9090	Aluminium-framed case for portable gas sample probe PSP4000H and max. 5 m [ $\approx$ 16.4 ft] heated sample line PSP4M4/6 or max. 8 m [ $\approx$ 26.2 ft] PSP4M4/6-W, dimensions: (H x W x D): 530 x 420 x 300 mm [ $\approx$ 20.9" x 16.5" x 11.8"]

1) Please pay attention to the characteristic feature of ceramic in case of high and changing temperatures!

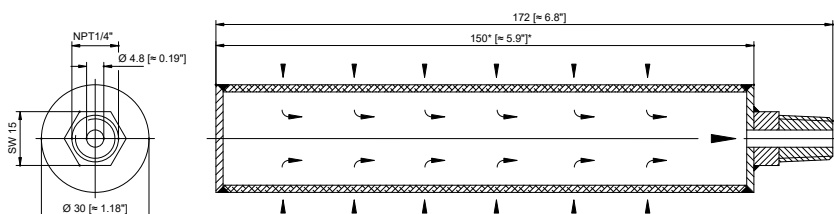
Temperature controller: see data sheets "Electronic Temperature Controller plug-in system, Version TRD-H1, Version TRD-H3", "Electronic Temperature Controller 701" and "Microprocessor-Controlled Temperature Controller Type 70304"; portable gas conditioning system: see data sheets, "Portable Gas Conditioning Unit Series PSS" for PSS5, PSS5/3, PSS5C, PSS5C/2, PSS5C/3 and PSS-10/1; portable oxygen analyzer: see data sheets "Oxygen Analyzer Series PMA" for PMA10 and PMA10S.

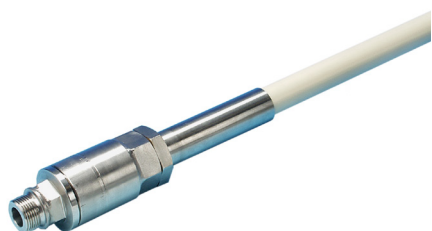
Hastelloy® is a registered trademark for a nickel-chromium-molybdenum alloy by Haynes International, USA.

Inconel® is a registered trademark for a nickel-based alloy by Special Metals Corporation, USA.

Kanthal® is a registered trademark for an iron-chromium-aluminium alloy by the Sandvik Group, Sweden.

## Pre-filter SP1





Sample tubes for series SP®

# Sample Tubes for Gas Sample Probes Series SP®

with G 3/4" connection thread

## Special Features

- For dust levels up to 2 g/m<sup>3</sup>
- Point-selective sampling
- Sampling downstream wet scrubber up to 90 °C [194 °F]
- Sampling temperature up to max. 1800 °C [3272 °F]
- Different lengths
- Great variety of materials
- Easy mounting

## Application

The M&C sample tubes are used in combination with the M&C gas sample probes series SP® for point-selective continuous gas sampling in processes with low dust levels.

## Description

The M&C probe sample tubes SP210/SS and SP2000 are selected according to the specific applications. Influencing process parameters are the gas composition, dust content, water vapor saturation, temperature, pressure and gas velocity.

In addition to the standard length 'L1', other lengths up to 'L max' are available on request.

For applications with low sample gas flow, sample tubes SP2000/SS-Vm are equipped with volume displacers to decrease the downtime.

Gas sampling downstream a wet scrubber with a high content of water is carried out with the M&C sample tube SP32 equipped with an integrated demister for droplet separation.

Depending on the selected material, the M&C sample tubes are equipped with a welded thread adapter or a support adapter. They are partially made out of different materials than the tubes, depending on manufacturing. See table below.

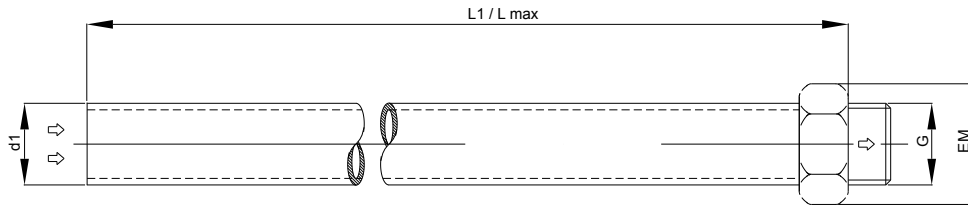
The connection thread enables easy mounting into the mounting flange of the M&C gas sample probes.

Further sampling accessories:

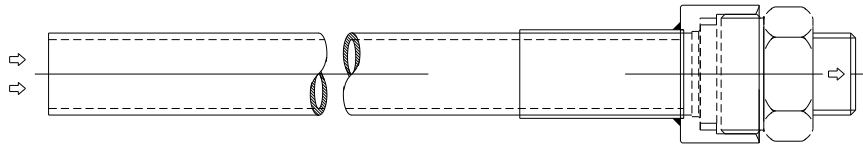
For a high dust load: pre-filter V20, V12

For lower deviation of dew point on process side: heated sample tubes SP30, SP35

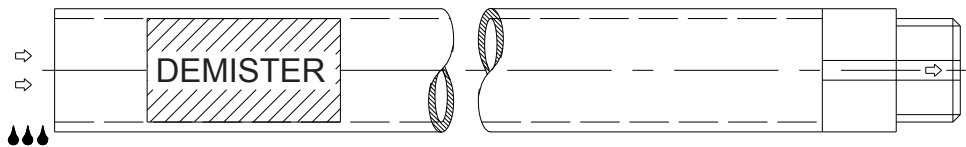
Sample tube SP210SS / SP2000... / CR-N with welded thread connection



Sample tube SP2000/ CR-2(20) /AO for >1300 C with support adapter



Sample tube SP32 with demister for gas sampling behind wet scrubber



Technical Data

M&C Probe sample tube Type	Part. No.	Temperature max. °C [°F]	Material Tube/connection part	Length 'L1' <sup>1)</sup> mm [inch]	Length 'L max' mm [inch]	Connection thread 'G'	Tube ø o/i 'd1' mm	Connection ø o 'EM' mm
SP2000/PV	20S9070	90 [194 °F]	PVDF/PTFE-fiber glass-reinforced	1000 [≈ 39.4"]	1500 [≈ 59.1"]	G 3/4" o	25/21	50
SP32	20S9280	90 [194 °F]	PVDF/PTFE-fiber glass-reinforced	800 [≈ 31.5"]	800 [≈ 31.5"]	G 3/4" o	50/44	50
SP2000/T	20S9083	160 [320 °F]	PTFE/PTFE-fiber glass-reinforced	500 [≈ 19.7"]	500 [≈ 19.7"]	G 3/4" o	25/15	33
SP2000/Ti	20S9075	400 [752 °F]	Titan	1000 [≈ 39.4"]	2500 [≈ 98.4"]	G 3/4" o	25/22	37
SP210/SS	02S9200	600 [1112 °F]	Stainl. steel 316Ti	1000 [≈ 39.4"]	2000 [≈ 78.7"]	G 3/4" o	12/10	37
SP2000/SS	20S9065	600 [1112 °F]	Stainl. steel 316Ti	1000 [≈ 39.4"]	2500 [≈ 98.4"]	G 3/4" o	25/22	37
SP2000/SS-Vm	20S9067	600 [1112 °F]	Stainl. steel 316Ti	1000 [≈ 39.4"]	2500 [≈ 98.4"]	G 3/4" o	25/06	37
SP2000/HC	20S9090	900 [1652 °F]	Hastelloy® C4	1000 [≈ 39.4"]	2500 [≈ 98.4"]	G 3/4" o	25/22	37
SP2000/KA	20S9080	1300 [2372 °F]	Kanthal®/SS 316Ti	1000 [≈ 39.4"]	1500 [≈ 59.1"]	G 3/4" o	27/20	37
SP2000/IN	20S9077	1100 [2012 °F]	Inconel®	1100 [≈ 43.3"]	2500 [≈ 98.4"]	G 3/4" o	25/22	37
SP2000/HR160	20S9103	1200 [2192 °F]	Alloy HR160®	1000 [≈ 39.4"]	2000 [≈ 78.7"]	G 3/4" o	27/21	37
SP2000/CR-2*	20S9098	1400 [2552 °F]	Cr AL <sub>2</sub> O <sub>3</sub> /Hastelloy® C4	900 [≈ 35.4"]	900 [≈ 35.4"]	G 3/4" o	22,5/13	50
SP2000/CR-20*	20S9099	1400 [2552 °F]	Cr AL <sub>2</sub> O <sub>3</sub> /Hastelloy® C4	1200 [≈ 47.2"]	1200 [≈ 47.2"]	G 3/4" o	22,5/13	50
SP2000/CR-N	20S9086	1400 [2552 °F]	Silicon nitride-ceramic/ Stainl. steel 316Ti	1000 [≈ 39.4"]	on request	G 3/4" o	29/22	50
SP2000/AO w/o connection part/adapter	20S9385	1800 [3272 °F]	Aluminiumoxyde <sup>2)</sup> /	1000 [≈ 39.4"]	1500 [≈ 59.1"]		24/18	
Adapter for SP2000/AO	20S9395	(600 [1112 °F])	/Stainless steel 316Ti			G 3/4" o		50
Adapter for SP2000/AO	20S9397	(900 [1652 °F])	/Hastelloy® C4			G 3/4" o		50

\* Sample tube with support adapter. Max. temperature around the support adapter on approx. 200 mm [≈ 7.9"] length depending on material: 600/900 °C [1112/1652 °F].

<sup>1)</sup> Standard

<sup>2)</sup> Please pay attention to the characteristic feature of ceramic in case of high and changing temperatures!

Other materials or designs on request.

For further technical information, see Sample Probes SP 210/2100/2000.

Hastelloy® is the brand name of a nickel-based alloy from Haynes International.

Kanthal® is a trademark of the Sandvik Group for various electrical heating products.

Inconel® is a Special Metals Corporation brand name for a range of corrosion-resistant nickel-based alloys.

Alloy HR160® is a trademark of Haynes International, USA.



SP30-H1.1

# Electrically Heated Sample Probe Tube Series SP®

Versions SP30-H, SP30-H1.1-V, SP35-H  
for the stationary gas sample probe SP2000-H

## Special Features

- Completely heated sample tubes
- Different lengths
- Non-heated pre-filters or extensions possible
- Simultaneously heated pre-filters possible
- Easy installation
- Two temperature sensor versions

## Application

The electrically heated sample tube SP30/35-H is used wherever cooling down or falling below the dew point is to be avoided during gas extraction from the sampling point to the heated gas sample probe SP2000-H.

In dust-loaded processes which tend to fall below the dew point in the sampling area during operation or when the plant is at a standstill, it may be advisable to use the electrically heated sample tube SP30-H1.1-V with heated in-situ pre-filter V20-2/30. This prevents premature clogging or destruction.

The sample tubes are available with temperature sensors for max. 320 °C [608 °F] or 200 °C [392 °F] operating temperature.

## Description

The electrically heated M&C double-jacket sample tube SP30-H is available in lengths of 0.6/1.0/1.5/2.0/2.5 m [≈ 2.0/3.3/4.9/6.6/8.2 ft] and the SP35-H in 0.175 m [≈ 0.6 ft]. The standard lengths of the pre-filter version SP30-H1.1-V are 0.6/1.0 m [≈ 2/3.3 ft].

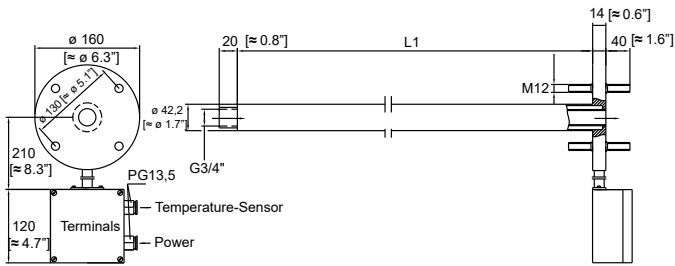
The sample tubes SP30-H/-V and SP35-H are equipped with a mounting flange with 4 threaded bolts welded on both sides for easy fixing at the sampling nozzle and for mounting the gas sample probe SP2000-H. At the end of the double-jacket tube of the SP30-H/SP35-H versions, there is a G 3/4" connection into which a non-heated sample tube or a pre-filter can be screwed as required.

The electrical heating is process-protected in the double jacket of the sample tubes SP30-H/-V and SP35-H. In the version SP30-H1.1-V, the large screw-on large pre-filter V20-2/30 is also heated by the sample tube.

The setpoint of the sample tube's temperature controller must be set accordingly high in line with the process conditions (see table). The sample tubes of versions SP30-H and SP35-H have an inner tube of ø 22 mm. The version SP30-H1.1-V is equipped with an inner tube of ø 6 mm in order to reduce the internal dead volume.

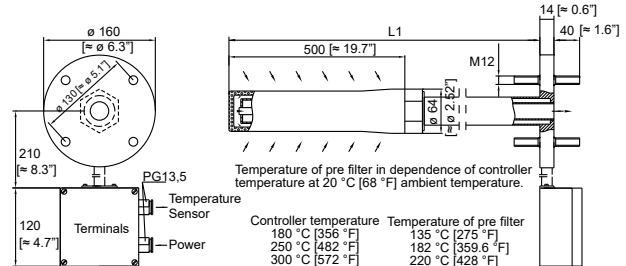


Probe tube SP30-H1.1/H2, SP35-H1.1/H2



Dimensions in mm [Inches]

Probe tube with pre-filter SP30-H1.1-V



Technical Data

Series SP <sup>*</sup> Type	Version SP35		Version SP30		
	H1.1	H2	H1.1	H2	H1.1-V
Temperature sensor	Fe-CuNi	PT100 2-wire	Fe-CuNi	PT100 2-wire	Fe-CuNi
Temperature controller	Optional, external				
Probe tube length L1	175 mm [≈ 0.6 ft]		Max. 2 m [≈ 6.6 ft]		Max. 1 m [≈ 3.3 ft]
Sample temperature max.	550 °C [1022 °F]				
Operating temperature max.	320 °C [608 °F]	200 °C [392 °F]	320 °C [608 °F]	200 °C [392 °F]	320 °C [608 °F]
Pre-filter length: 520 mm, ø 60 mm, filter porosity: 2 µm, integrated and heated					V20-2/30
Sample gas inlet connection	G 3/4" i DIN ISO 228/1				Pre-filter with G1 1/2" i DIN ISO 228/1
Dust load	Max. 2 g/m <sup>3</sup>				> 2 g/m <sup>3</sup>
Internal dead volume	380 ml/m				420 ml/m
Sample pressure max.	5 bar g				
Ambient temperature	-20 to +80 °C [-4 to 176 °F]				
Storage temperature	-30 to +90 °C [-22 to 194 °F]				
Ready for operation	After 2 hours				
Power supply	230 V AC, (115 V optional)		230/115V AC - switchable,		
Heating capacity	200 W		0.6 m: 600 W, 1 m: 800 W, 1.5 m: 1200 W, 2 m: 1200 W		
Electrical connections	Terminals, max. 2.5 mm <sup>2</sup> , 2 x PG 13.5 cable gland				
Electrical standard	EN 61010, EN 60519-1				
Degree of protection	IP54 EN 60529				
Mounting flange	DN 65 PN 6, Form B with mounting bolts on both sides M 12 x 40 mm				
Material of parts in contact with the sample	Stainless steel SS 904L, Version SP30-H1.1/H2: Hastelloy® X				SS 904L, 316Ti/316

Pressure difference and T90 time

ΔP and T <sub>90</sub> at a flow rate of:	100	200	500	1000	NI/h
ΔP pressure loss SP30-H, length 1 m [≈ 3.3 ft]	< 1	< 1	< 1	< 1	mbar
ΔP pressure loss SP30-H-V, length 1 m [≈ 3.3 ft] with new pre-filter V20-2/30	< 1	< 1	1.5	4	mbar
T <sub>90</sub> time	14	7	< 3	< 2	sec

Part number and weight

	Version SP35	Version SP30				Type:	
Length "L1"	175 mm [≈ 0.6 ft]	0.6 m [≈ 2 ft]	1.0 m [≈ 3.3 ft]	1.5 m [≈ 4.9 ft]	2.0 m [≈ 6.6 ft]	2.5 m [≈ 8.2 ft]	
Part number	20S9320	02S9023	02S9025	02S9026	02S9024	02S9022	H1.1
		02S9096	02S9092	02S9093	02S9094	02S9095	H1.1/H2
	20S9322	02S9023p	02S9025p	02S9026p	02S9024p		H2
Weight	4.8 kg [≈ 10.6 lbs]	5 kg [≈ 14.1 lbs]	8.0 kg [≈ 17.6 lbs]	9.8 kg [≈ 21.6 lbs]	11.6 kg [≈ 25.6 lbs]		
Part number		02S9037	02S9038				H1.1-V
Weight		9.0 kg [≈ 19.8 lbs]	10.6 kg [≈ 23.4 lbs]				
	+ 02S9036	Standard, switchable					115 V AC

The corresponding temperature controller has to be ordered and mounted separately. See datasheet "Microprocessor-Controlled Temperature Controller Type 70304"

Hastelloy® is a registered trademark used by Haynes International, USA.



SP34-H

# Electrically Heated Sample Probe Tube Series SP®

Version SP34-H for portable gas sample probe PSP4000-H

## Special Features

- **Completely heated sample tube**
- **Non-heated pre-filters or extensions possible**
- **Easy mounting**
- **Standard: with thermostat controller**
- **Optionally: thermocouple Fe-CuNi or PT100**

## Application

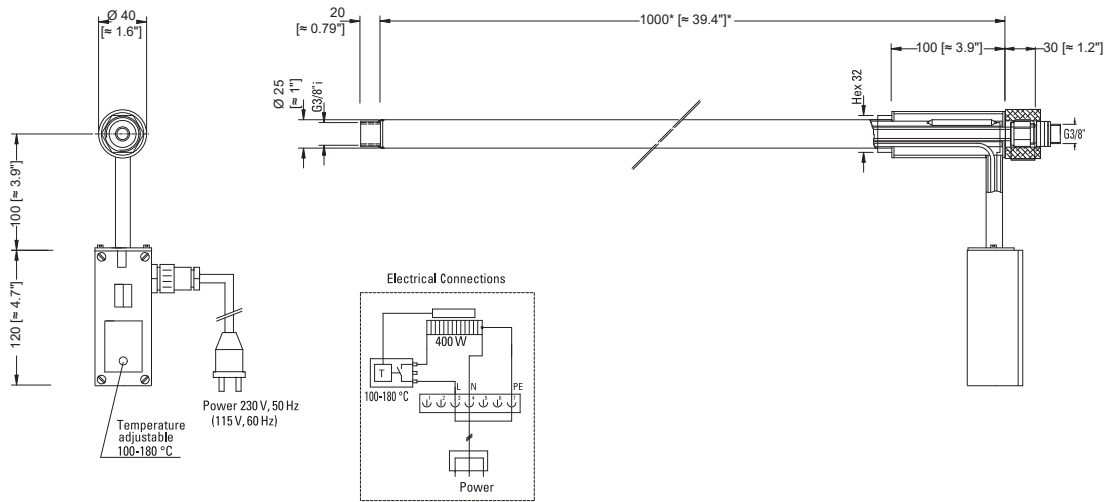
The electrically heated M&C sample tube SP34-H is used in portable sampling systems wherever cooling down of the temperature or falling below the dew point is to be avoided during gas sampling from the sampling point to the heated gas sample probe PSP4000-H.

## Description

The standard length of the heated M&C double-jacket tube SP34 is 1000 mm [3.3 ft]. Other tube lengths are available on request.

The sample tube is screwed into the inlet of the gas sample probe PSP4000-H with a G 3/8" male thread connection. At the other end of the double-jacket sample tube, there is a G 3/8" female connection into which a non-heated sample tube or a pre-filter can be screwed as required. The electrical heating of the sample tube SP34-H is separated from the process in a double-jacket tube

An adjustable capillary thermostat for temperature control ranging from 100 to 180 °C [212 to 356 °F] is provided in the attached terminal box of the standard version. In this case, an external temperature controller is not needed. The versions with thermocouple or PT100 require an external temperature controller.



Dimensions in mm

## Technical Data

	SP 34-H	SP 34-H1.1	SP 34-H2
Part No.	40S9115	40S9120	40S9125
Temperature sensor	Capillary sensor	Fe-CuNi	PT100
Temperature controller	Capillary thermostat	Optional, external	
Tube length	1 m [ $\approx 3.3$ ft] standard		
Connections	IN G 3/8" female thread, OUT G 3/8" male thread, DIN ISO 228/T		
Material	Stainless steel SS 316Ti		
Controller temperature max.	180 °C [356 °F]		
Sample temperature max.	400 °C [752°F]		
Ambient temperature (controller)	-20 to +60 °C [-4 to 140 °F]		
Power supply	230 V 50 Hz 400 W, with 4 m [ $\approx 13.1$ ft] cable / 115 V 60 Hz		
Degree of protection/electrical equipment standard	IP54 EN 60529/EN 61010, EN 60519-1		
<b>Option</b>			
Part No. 02S9036	Extra charge for SP34-H with power supply 115 V 60 Hz		