



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.

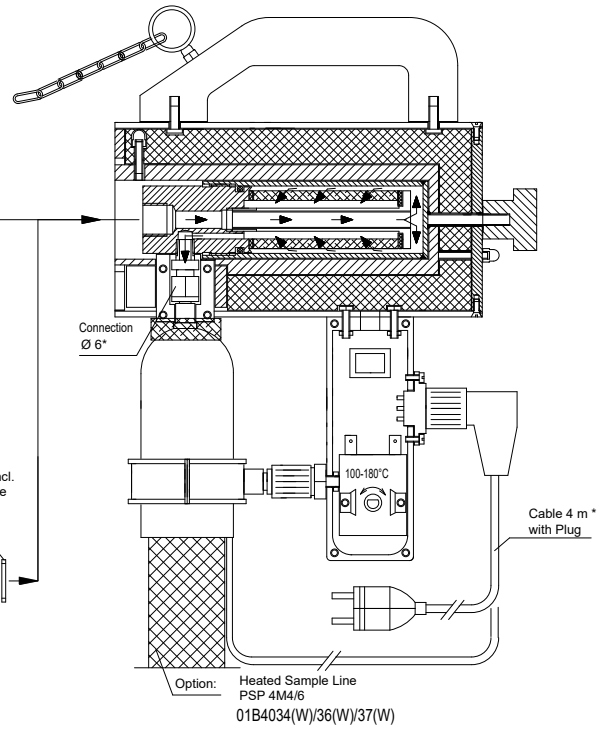
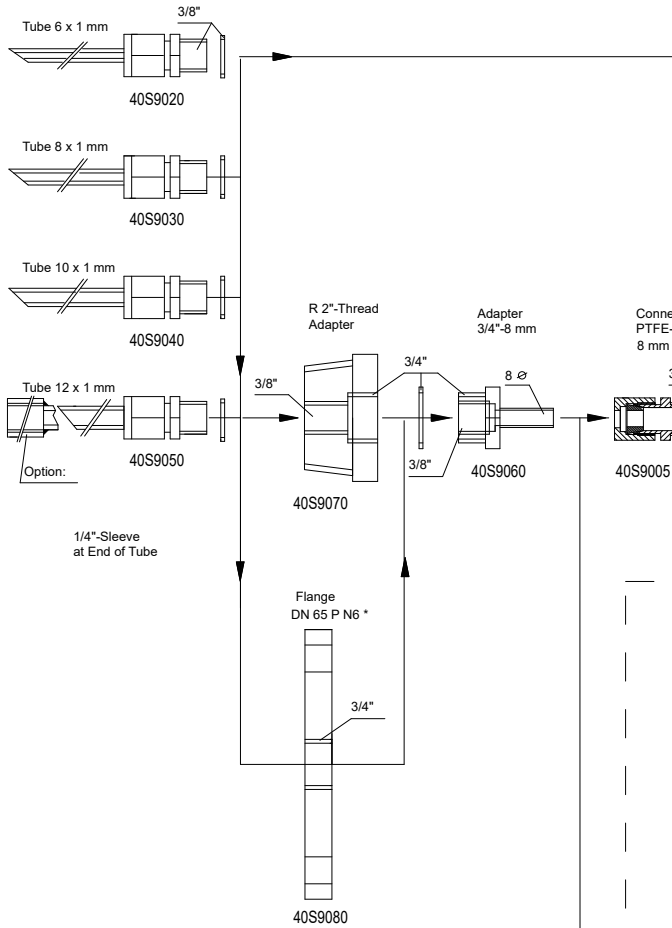
The version PSP4000-H/C allows calibration gas feeding into the probe without dismantling the probe.

Sampling Options

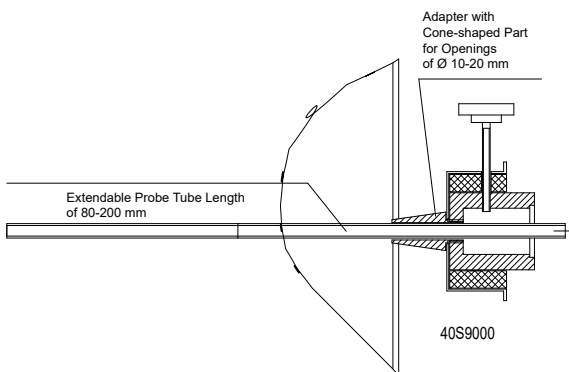
Basic Version PSP4000-H

40S1000

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



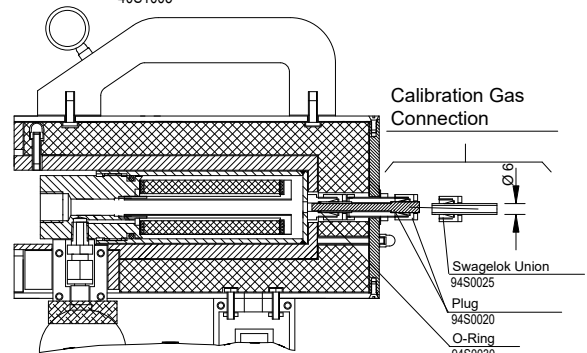
Adapter for Extensible Probe Length  
Tube 8 x 1 mm, Material: SS316



\* Standard

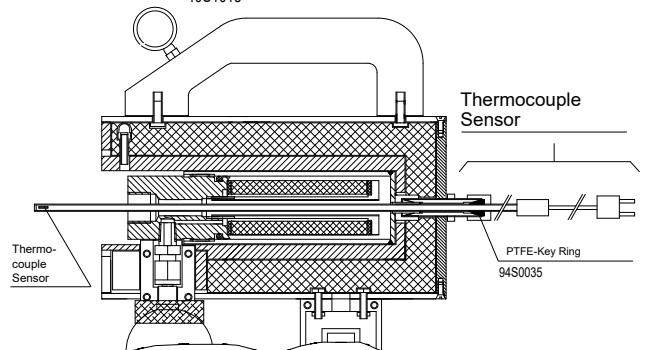
PSP4000-H/C

40S1005



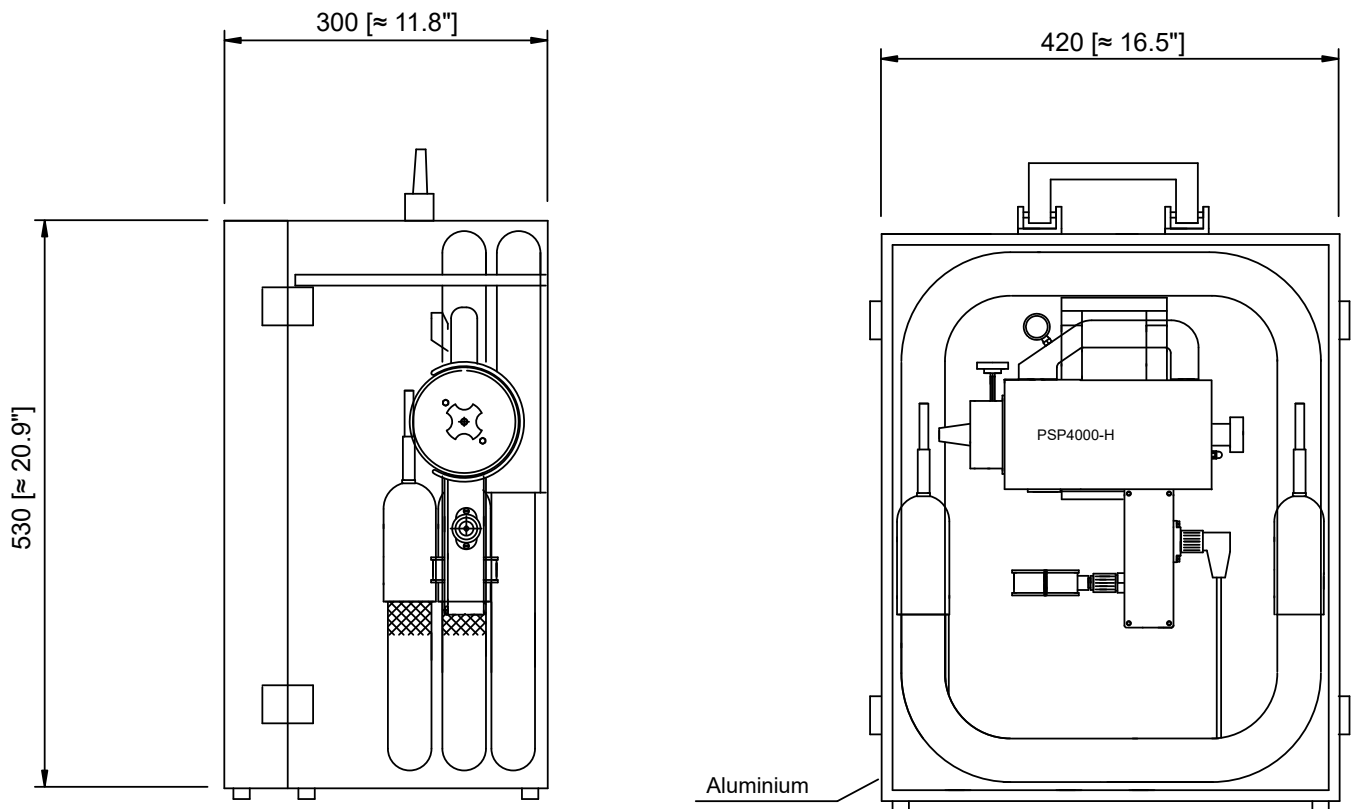
PSP4000-H/C/T

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

