

Technical Data Combination Probe KS1D-KA / KS1D-KAF



Fig. 1 Combination Probe KS1D-KA



Fig. 2 Combination Probe KS1D-KAF

The hose connections for calibration (air or test gas) for semi-automatic calibration.

Installation depth X	KS1D-KA (AF)	LS2-KA (AF)	KS1-KA (AF)
500 mm / 19.69 " in	Type 656R2030/A (/AF)	Type 650R2030/A (/AF)	Type 656R1030/A (/AF)
1,000 mm / 39.37 " in	Type 656R2031/A (/AF)	Type 650R2031/A (/AF)	Type 656R1031/A (/AF)
1,500 mm / 59.06 " in	Type 656R2032/A (/AF)	Type 650R2032/A (/AF)	Type 656R1032/A (/AF)

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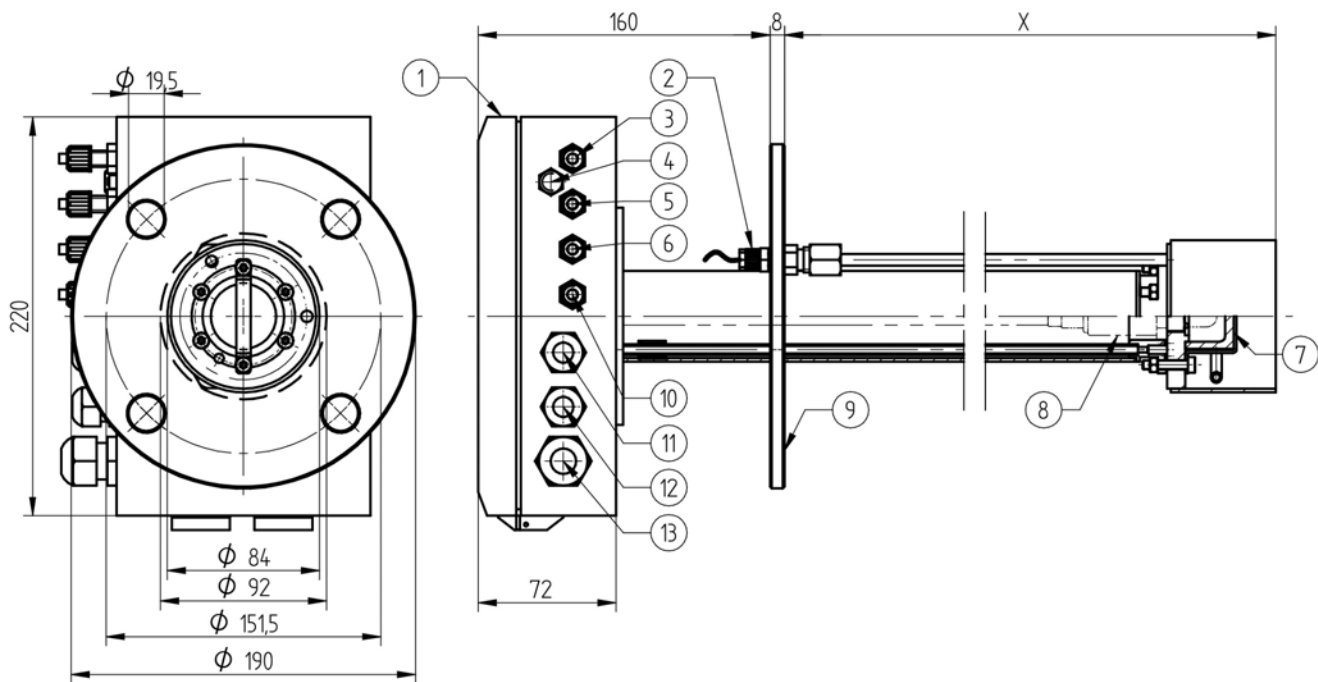


Fig. 3 Probe LS2-K with purge unit

No.	Description
1	Probe connection box (PCB)
2	Hose connection 4/6 mm / 0.16/0.24 " in "Purge filter outside" from solenoid valve unit – Instrument air (pre-pressure 6 bar)
3	Hose connection 4/6 mm / 0.16/0.24 " in „calibration gas" (pre-pressure 0.3 bar) Instrument air for offset calibration or test gas (example 2 Vol.% O ₂ in N ₂)
4	Outlet of reference air
5	Hose connection 4/6 mm „reference air" from solenoid valve unit – Instrument air (pre-pressure 0.3 bar) – Air consumption approx. 10 l/h
6	Hose connection 4/6 mm / 0.16/0.24 " in „Purge filter internal side" from solenoid valve unit – Instrument air (pre-pressure 3 bar)
7	Filter resolution 20 µm
8	Sensor
9	Flange DN80PN6 (Deviant flange thickness 8 mm)
10	Hose connection 4/6 mm / 0.16/0.24 " in „pressure sensor" from solenoid valve unit
11	Cable gland input M16 – Reserve
12	Cable gland input M16 – Probe heating
13	Cable gland input M20 - Absolute pressure sensor, differential pressure sensor probe signals

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Characteristics	
Measuring range	O₂ : 0 ... 18 Vol.% O ₂ with restriction 0 ... 21 Vol.% O ₂ CO_e : 0 ... 10.000 ppm CO _e
Measurement accuracy	O₂ : ± 5 % of the measured value, after previous calibration with test gas, - not better than ± 0,3 Vol.% O ₂ CO : ± 25 % of the measured value - no more precise than ± 10 ppm on natural gas combustion, after previous calibration under operating plant conditions with a CO-reference measurement in measuring range 0 ... 100 ppm
Response time t ₆₀ (60 % of end value)	O₂ ≤ 10 s CO_e ≤ 5 s
Cross sensitivity	to SO ₂ , NH ₃ , NO, propane and aromatic hydrocarbons
Pressure influence of measuring gas	change of -1,6 mV/100 mbar
Internal resistance of probe R _I with air at 20 °C / 68 °F and 21 W heating output (new probe)	15 ... 30 Ω – O ₂ -electrode 15 ... 30 Ω – CO/H ₂ -electrode
Probe voltage output	O₂ : 150 ... -30 mV ↔ 0 ... 21 Vol% O ₂ CO_e : -30 ... 800 mV ↔ 0 ... 10.00 ppm CO _e resolution: 0,1 mV
Power consumption of heater	10 ... 25 W - depending on measuring gas temperature (at T _{Gas} 350 °C / 662 °F approx. 18 W)
Power supply voltage of heater	AC/DC at P _H 18 VA → 11,4 V at P _H 20 VA → 12,34 V at P _H 25 VA → 14,8 V
Heating current at P _H 20 VA	approx. 1,6 A approx. 5 A short-term at heat up PTC-characteristics
Insulation resistance	>30 MΩ (between heater and probe connection)
Durability	≥ 2 years by using fuel and natural gas
Weight	6, kg / 14.3 lb to 500 mm / 19.69" in length
Electrical connection	terminal
Operating temperature of measuring cell (sensor) on 13 V heating voltage to air (20 °C / 68 °F)	650 °C / 1,202 °F
Measurement principle	zirconium dioxide cell (ZrO ₂) potentiometric (voltage probe)
Heating-up time	20 min. up to operating temperature
Test gas calibration	semi-automatic with air and test gas (max. 0,3 bar) Possible with installed conditions and running combustion

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Operating condition	
Mounting / measuring gas extraction device	directly in exhaust gas channel / in situ
Mounting position	horizontal via vertical to horizontal
Permissible fuels	gaseous hydrocarbons, light fuel oil, lignite and coal, wood. Direct measurements in fuel gases are not possible
Reference air supply	via reference pump 657R1060 (option LT2) alternative via instrument air on site 0,3 bar max. 100 l/h
Flange adapter	probe type: KS1D-KAF DN80PN6 with pipe socket DN125, flange type 657R3506/657R3507

Environmental conditions

Probe head	permissible flue gas temperature	≤ 450 °C / 842 °F type KS1D-KA ≤ 200 °C / 392 °F type KS1D-KAF
Operation	permissible temperature	< 100 °C / 212 °F at the cable gland < 100 °C / 212 °F at the connecting cable
Storage	permissible temperature	-20 ... +60 °C / -4 ... +140 °F
Degree of protection	DIN EN 40050	IP65

NOTICE

The limits of the technical data must be strictly adhered to.

Order Information

Combination Probe KS1D-KA for simultaneous measurement of oxygen (O₂) and unburnt residue (CO/H₂).

- Application for high dust loads up to 1,500 mg/m³
- For semi automatic calibration
- Incl. hose connectors for testgas and dedusting operation
- Electronic connection on screw terminals, IP65
- Flue gas temperature max. 450 °C / 842 °F

Description / Type	Order no.
Combination Probe KS1D-KA semi automatically calibration and dedusting operation immersion depth from flange 500 mm / 19.69" in	656R2130/A
Combination Probe KS1D-KA semi automatically calibration and dedusting operation immersion depth from flange 1,000 mm / 39.37" in	656R2131/A
Combination Probe KS1D-KA semi automatically calibration and dedusting operation immersion depth from flange 1,500 mm / 59.06" in	656R2132/A

Additional required:

- Lambda Transmitter LT2, configured for KS1D in application "semi automatically calibration and dedusting operation"
Order no. 657R102 / KS1D / 4KA / ...
- Counter flange, order no. 657R3506 / R3507
- Flange gasket, order no. 657R3542
- Pneumatic box 24 VDC for controlling of the purge device, order no. 650R2080
Cyclic control is performed by LT2 (parameterizable).

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Combination Probe KS1D-KAF for simultaneous measurement of oxygen (O₂) and unburnt residue (CO/H₂).

- Application for high dust loads up to 2,000 mg/m³
- For semi automatic calibration
- Incl. hose connectors for testgas and dedusting operation
- Electronic connection on screw terminals, IP65
- Flue gas temperature max. 200 °C / 392 °F

Description / Type	Order No.
Combination Probe KS1D-KAF, semi automatically calibration and purging, incl. filter fleece (filter disk), immersion depth from flange 500 mm / 19.69" in	656R2130/AF
Combination Probe KS1D-KAF, semi automatically calibration and purging, incl. filter fleece (filter disk), immersion depth from flange 1,000 mm / 39.37" in	656R2131/AF
Combination Probe KS1D-KAF semi automatically calibration and purging, incl. filter fleece (filter disk), immersion depth from flange 1,500 mm / 59.06" in	656R2132/AF

Additional required:

- Lambda-Transmitter LT2, configured for KS1D in application
"semi automatically calibration and dedusting operation"
Order no. 657R102 / KS1D / 4KA / ...
- Counter flange, order no. 657R3506 / R3507
- Flange gasket, order no. 657R3542
- Pneumatic box 24 VDC for controlling of the purge device, order no. 650R2080
Cyclic control is performed by LT2 (parameterizable).

The information in this publication is subject to technical changes.



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