

Technical Data Combination Probe KS1D-Ex (Type ZPF2)

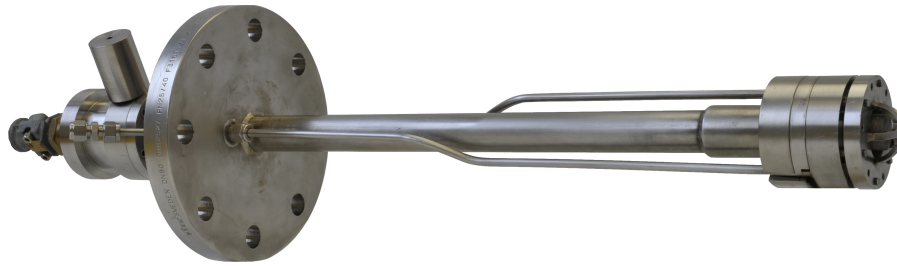


Fig. 1 KS1D-Ex ...

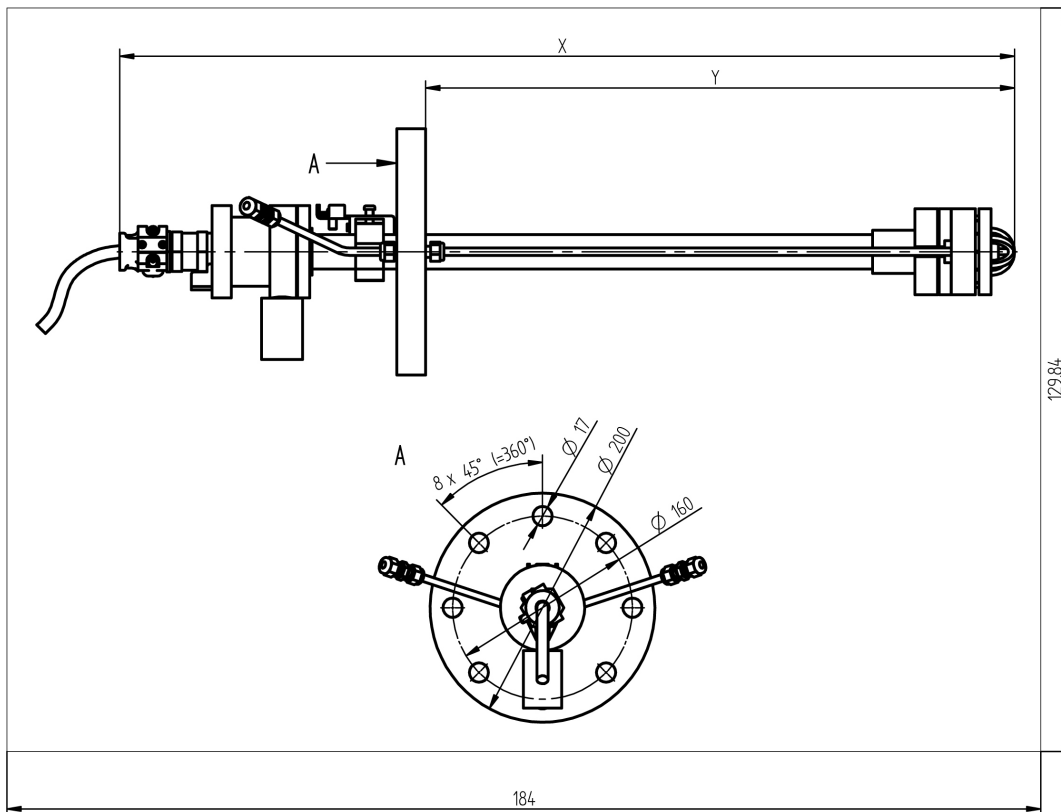


Fig. 2 Dimensional drawing KS1D-Ex ...

Length [mm] (in.)

x	770 / 1130 (30.3 / 44.5)
y	500 / 860 (19.7 / 33.9) (immersion depth)

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Technical Data KS1D-Ex	
Measuring range	O ₂ : 0 ... 18 Vol. % O ₂ with restriction 0 ... 21 Vol. % O ₂ CO _e : 0 ... 10.000 ppm CO _e
Measurement accuracy	O ₂ : ± 5 % of the measured value, after previous calibration with test gas, - not better than ± 0,2 Vol. % CO _e : ± 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)	O ₂ ≤ 20 s CO ≤ 10 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
Probe internal resistance R _I at air with 20 °C / 68 °F and 22 W heating power (new probe)	15 ... 30 Ω – O ₂ -electrode 15 ... 30 Ω – CO/H ₂ -electrode
Probe output voltage	O ₂ -electrode: 150 mV ... -30 mV ⇔ 0 ... 21 Vol. % O ₂ resolution: 0.1 mV CO/H ₂ -electrode: -30 ... 800 mV ⇔ 0 ... 000 ppm CO _e resolution: 1 mV
Heating power consumption	10 ... 25 W – depending on measuring gas temperature (at T _{Gas} 350 °C/ 662 °F approx. 18 W)
Power supply voltage heating current	AC/DC with P _H 18 VA ® 11,4 V with P _H 20 VA ® 12,34 V with P _H 25 VA ® 14,8 V
Heating current bei P _H 20 VA	approx. 1.3 A approx. 5 A short-term at heat up PTC-characteristics
Insulation resistance	> 30 MΩ between heater and probe connection
Weight	10.8 kg / 23.8 lb to 500 mm / 19.69 °in length 13 kg / 28.6 lb to 860 mm / 33.86 °in
Electrical connection	connecting cable 2 m
Material	probe body 1.4571 mounting flange 1.4571 sintered metal pre-filter 1.4404 CrV-steel
Measurement principle	zirconium dioxide cell (ZrO ₂) potentiometric (voltage probe)
Heating-up time	20 min up to operating temperature
Firing-rate point	possible with installed conditions and running combustion
Test pressure sintered metal pre-filter	26 bar (g)

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Operating condition

Durability	≥ 3 years by using natural gas
Mounting / measuring-gas extraction device	directly in exhaust gas channel / in situ
Mounting position	horizontal via vertical
Permissible fuels	residue-free, gaseous hydrocarbons, light fuel oil, heavy fuel oil, coal, wood direct measurements in fuel gases are not possible
Permissible continuous flue gas temperature	≤ 450 °C (842 °F)
Reference air supply	via instrument air on site approx. 80 l/h
Flange adapter	DN80 PN40

Environmental conditions

Operation	permissible temperature range	-20 ... +60 °C / -4 ... +140 °F
Transport	permissible temperature range	-20 ... +60 °C / -4 ... +140 °F
Storage	permissible temperature range	-20 ... +60 °C / -4 ... +140 °F
Degree of protection	DIN EN 60529	IP65
Type of protection	Ex-zone 1	 II 2 G Ex db IIB + H2 T3 (160 °C) Gb (probe) II 2 G (temperature shut-down)
	Ex-zone 2	 II 3 G Ex db IIB + H2 T3 (160 °C) Gb (probe)

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Order Information

Combination Probe KS1D-Ex for simultaneous measurement of oxygen (O₂) and unburnt residue (CO/H₂) for flue gas temperatures up to 450 °C / 842 °F, response time t₍₆₀₎ O₂: < 20 s , CO_e: < 10 s
with test gas connector, IP65

Description / Type	Order no.
Combination Probe KS1D-Ex, for Ex zone 1, type of protection II 2G EEx d IIB + H2T3 immersion depth from flange 500 mm / 19.7 "in) Cable length 2 m / 6.6 ft.	656R4000
Combination Probe KS1D-Ex , for Ex-Zone 1, type of protection II 2G EEx d IIB + H2T3 immersion depth from flange 860 mm / 33.8 "in. Cable length 2 m / 6.6 ft.	656R4005
Combination Probe KS1D-Ex, for Ex zone 2, type of protection II 3G EEx nc IIB+ H2T3 immersion depth from flange 500 mm / 19.7 "in. Cable length 2 m / 6.6 ft.	656R4010
Combi Probe KS1D-Ex, for Ex zone 2, type of protection II 3G EEx nc IIB+ H2T3 immersion depth from flange 500 mm cable length 5 m / 16.4 ft	656R4010/5
Combination Probe KS1D-Ex, for Ex zone 2, type of protection II 3G EEx nc IIB+ H2T3 immersion depth from flange 860 mm / 33.8 "in. Cable length 2 m / 6.6 ft.	656R4015

Additional required:

- Lambda Transmitter LT2, configuration for KS1D in type 'EX1' or 'EX2'
(for mounting in non Ex-area)
Order no. 657R102/KS1D/7EX1/... or 657R102/KS1D/8EX2/...
- Counter flange, order no. 650R4050 / R4051
- Flange seal, order no. 650R4052
- Probe connection unit, order no. 650P4026 or 657R1071

Accessories

Description / Type	Order no.
Counter flange DN80 PN40, for Ex-probes LS2 / KS1 / KS1D, steel CTL black coated	650R4050
Counter flange DN80 PN40, for Ex-probes LS2 / KS1 / KS1D, steel galvanized, special length up to 500 mm / 19.69 "in	650R4050S
Counter flange DN80 PN40, for Ex-probes LS2/KS1/KS1D, stainless steel 1.4571	650R4051
Counter flange DN80 PN40, for Ex-probes LS2/KS1/KS1D, stainless steel 1.4571, special length up to 500 mm / 19.69 "in	650R4051S
Counter flange DN80 PN40, for Ex-probes LS2 / KS1 / KS1D, steel CTL black coated, for transmitter protection housing	650R4053
Sealing DN80 PN40, for Ex-probes LS2 / KS1 / KS1D, Klinger Sil C-4400	650R4052
Probe connection unit for Ex-probes in ATEX-housing IP66, 400 x 300 x 150 mm / 15.75 x 11.81 x 5.91 "in Ex-Marking: II 2 GD Ex e II Ex tD A21 IP66 (LCIE02 ATEX 0037U)	657R1071

Spare Parts

Description / Type	Order no.
Replacement – Flowmeter with NAMUR limit signal, for probe connection unit of the Ex-probes	657R0070
Replacement – Switch amplifier AC230V with NAMUR-input for Ex-probes	657R0072

The information in this publication is subject to technical changes.



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