

# Technical Data CarboSen FT



Fig. 1 CarboSen FT

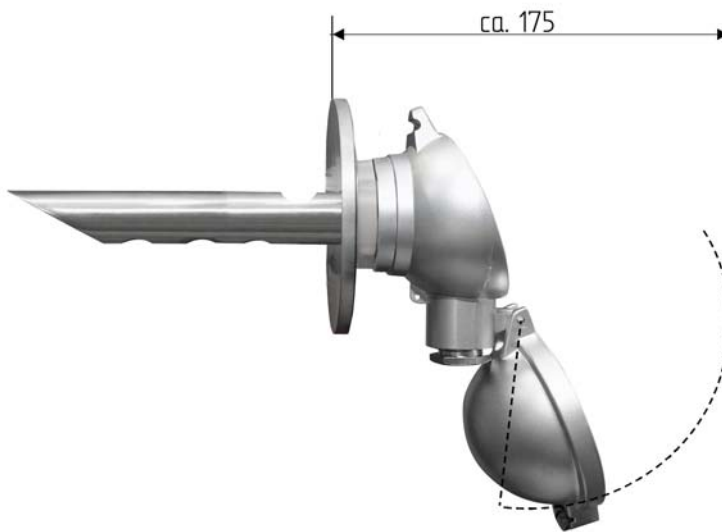


Fig. 2 CarboSen FT with open housing

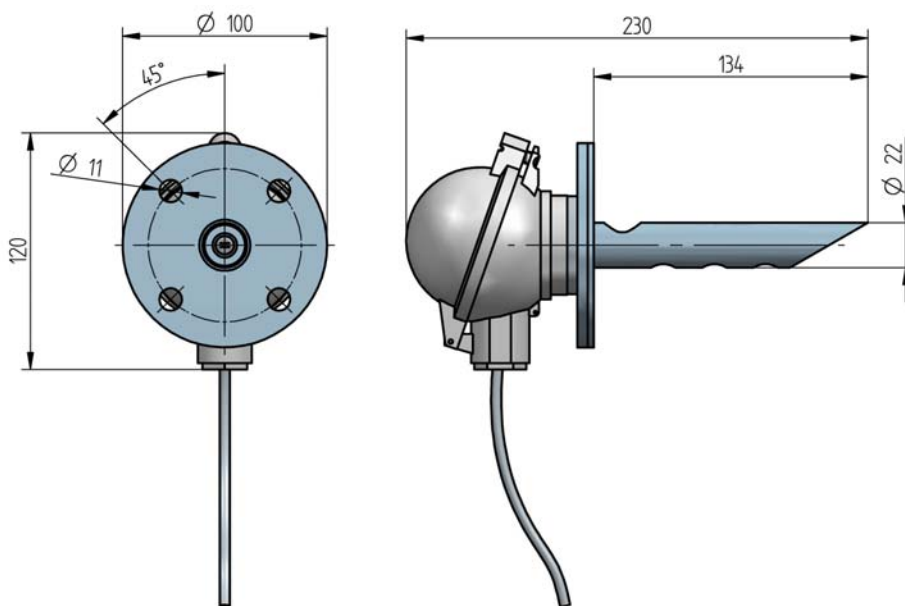


Fig. 3 Dimensions CarboSen FT

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Dimensions (W x H x D)	230 x 120 x 100 mm / 9.06 x 4.72 x 3.94" in
Weight	665 g / 1.47 lb (free cable ends, without plug)
Material	head housing: aluminium temperature decoupling: PTFE gas extraction device: stainless steel
Measurement range	CarboSen1.000FT: 0 ... 1,000 ppm CarboSen10.000FT: 0 ... 10,000 ppm
Measurement accuracy	CarboSen1.000FT: ±25 % of the measured value - not better than ±20 ppm  CarboSen10.000FT: ±30 % of the measured value - not better than ±40 ppm  - after previous calibration with operating conditions, - with almost constant fuel composition - after external compensation of the oxygen cross-sensitivity
Sensor signal	-750 ... +50 mV (signal is inverted within the device)
Response time $t_{60}$	< 3 s
Relaxation time (measurement readiness after over- load)	< 9 s
Offset to environment	< 5 ppm
Hysteresis	-
Linearity	-
Repeating precision	-
Ambient pressure dependency	-
Differential pressure dependency	-
Drift	-
Cross sensitivity	to CO <sub>2</sub> : - none to O <sub>2</sub> : - present
Influence of humidity	insignificant
Influence of installation position	none, if installed according to operating instructions
Influence of main voltage	none, if installed according to operating instructions
Influence of leakage	none, if installed according to operating instructions
Pressure influence of the measuring gas	-
Power supply voltage for heating	12 V PWM with sign change
Sensor temperature	approx. 630 °C / 1,166 °F with temperature factor $t_f = 2.6$
Heating power consumption	approx. 3.5 W with temperature factor $t_f = 2.6$ (max. 6 W)
Heating current	approx. 350 mA with temperature factor $t_f = 2.6$
Heating resistance	approx. 9.5 ± 1 Ω with temperature factor $t_f = 1.0$ (room temperature) approx. 25 Ω with temperature factor $t_f = 2.6$
Internal sensor resistance	approx. 300 ± 150 Ω with temperature factor $t_f = 2.6$
Lifetime	> 3 years (in case of light fuel oil and natural gas)
Heating-up time	> 30 s
Measurement principle	mixed potential-solid electrolyte sensor

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## Conditions of Use

Mounting/measuring gas extraction	directly in flue gas channel/in situ
Leakage	$qL^* \leq 100 \text{ cm}^3/\text{h}$
Mounting position	up to 85° against vertical
Permissible fuels	residue-free, gaseous hydrocarbons, natural gas, light fuel oil***
Permissible measuring gas humidity	100 % relativ humidity, condensing**
Permissible measuring gas temperature	at sensor head: -20 ... +150 °C (temporary by 170 °C) / -4 ... +302 °F (temporary 338 °F)
Permissible measuring gas speed	< 2 m/s / 6.56 ft/s (measured at measuring gas temperature of 25 °C / 77 °F). In case of smaller measuring gas temperatures it might be necessary to protect the probe from the incident flow.

\* According to DIN V 18160-1:2006-01, leakage towards environment through housing and mounting

\*\* Protect from drops/splash water/water

\*\*\* Direct measurement in combustion gases is not possible

## Environmental Conditions

<b>Operation</b>	permissible temperature range	on sensor plastic housing K	-20 ... +100 °C / -4 ... +212 °F
		on electrical contacts	-20 ... +90 °C / -4 ... +140 °F
		on cable bushing	-20 ... +70 °C / -4 ... +140 °F
		on connecting cable	-20 ... +70 °C / -4 ... +140 °F
		in head housing	-20 ... +70 °C / -4 ... +140 °F
<b>Transport</b>	permissible temperature range		-40 ... +60 °C / -40 ... +140 °F
<b>Storage</b>	permissible temperature range		-20 ... +40 °C / -4 ... -40 °F
<b>Degree of protection</b>	DIN EN 60529	IP65 (in mounting condition)	

## NOTICE

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

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## Order Information

### CarboSen FT for combustion technology, length 150 mm / 5.91" in, connecting cable 1.8 m / 5.91 ft

For detection of combustible gases (CO<sub>e</sub>), fluegas temperature up to 150 °C / 302 °F (temporary 170 °C / 338 °F), 100 % relativ humidity, condensing

Description/Type	Order no.
CarboSen1.000FT, length 150 mm / 5.91" in, connecting cable 1.8 m / 5.91" in, recommended detection range up to 1,000 ppm CO <sub>e</sub> GED stainless steel, connecting head aluminium, incl. flange fixing	658R0070
CarboSen10.000FT, length 150 mm / 5.91" in, connecting cable 1.8 m / 5.91" in, recommended detection range up to 10,000 ppm CO <sub>e</sub> GED stainless steel, connecting head aluminium, incl. flange fixing	658R0071

Additional required: Electronic evaluation unit CarboSen Transmitter CT2-F, probe connection to terminals

## Accessories

Description/Type	Order no.
Counter flange DN25PN6 with tube DN44, length 40 mm / 1.57" in, steel, catodic powder coated	658R0330
Counter flange DN25PN6 with tube DN44, length 40 mm / 1.57" in, stainless steel 1.4571/1.4404	658R0331

## Spare parts

Description/Type	Order no.
Sensor CarboSen1.000K in plastic housing	658P0100
Sensor CarboSen10.000K in plastic housing	658P0101
Connecting cable 2 m / 6.6 ft, with plug for CarboSenK2, one-side cable end sleeves	658P0102
Viton sealing for CarboSenK	658P0203
Flange sealing 3 mm / 0.12" in DN25PN6 Klinger Sil C-4400	658P0124



The information in this publication is subject to technical changes.

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