Sample Gas Cooler
EGK 1S and EGK 1SD

Accurate measurements of gases require gas samples with stable dew points even under harsh ambient conditions.

The EGK models provide a compressor-type cooling system connected to a cooling block. The cooling block evenly dissipates the heat thus supporting the highly efficient heat exchangers. The temperature of the cooling block is regulated by the **Bühler Constant Regulating System**. This system allows smooth regulation and eliminates the disadvantages of the traditional on-off operating mode.

The EGK 1 SD has an internal display showing the cooling block temperature and a blinking LED status alarm (+/- 5 °F deviation of the preset temperature). In both models, a dry relay contact is built in for status monitoring.

The cooling block accommodates either a single stream or a dual stream heat exchanger hence the cooler may serve two separate sample gas streams.

Condensate is removed either by peristaltic pumps , by automatic condensate drains or condensate vessels.

- **Compact design**
- **Single or dual gas streams**
- **Heat exchangers made of stainless steel, Duran glass or PVDF**
- **Bühler Constant Regulating System**
- **Cooling block temperature display (EGK 1 SD only)**
- **Selfchecking**
- **Status alarm**
- **Nominal cooling capacity 320kJ/h**
- **Dew point stability 0.1 °C**

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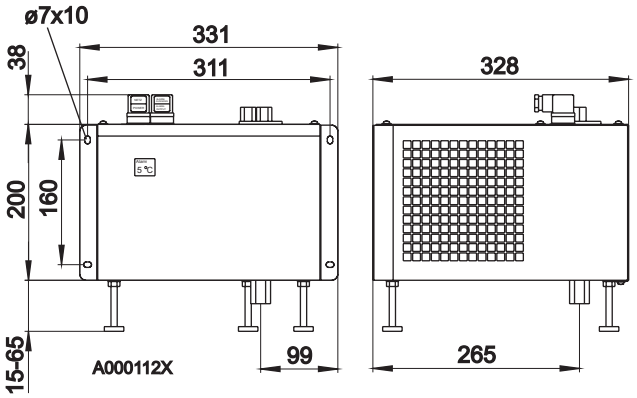
Technical Data

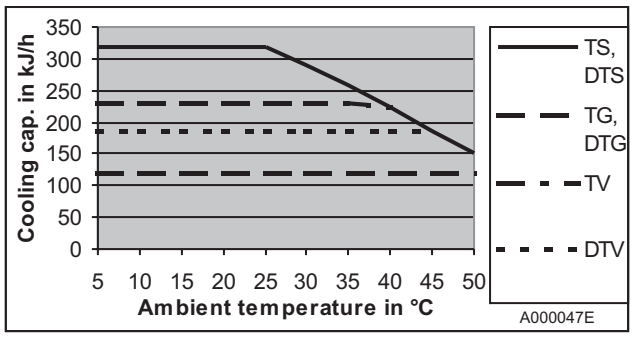
Ready for operation	max. 15 minutes
Cooling capacity (at 25°C)	320 kJ
Ambient temperature	+5..+50 °C
Dew point (set at factory)	approx. 5 °C
Dew point variations static	0,1 K
Over full operation range	± 1,5 K
Power supply	115 or 230 V, 50/60 Hz, Plug: DIN 43650
Power consumption	290/260 VA, fuse (external) 10 A
Alarm output:	max. 250V, 2 A, 50 VA plug acc. to DIN 43650
Protection class	IP 20
Housing	stainless steel
Installation	table or wall mounting
Packing dimensions	approx. 390 x 300 x 400 mm
Weight incl. heat exchangers	approx. 15 kg

Dimensions

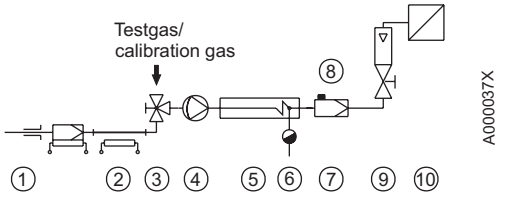


* diplay with EGK 1 SD only

Performance Data



Typical Installation Diagram:



1	Sample probe	7	Moisture detector
2	Sample tube	8	Fine filter
3	3 way valve	9	Flowmeter
4	Sample gas pump	10	Analyser
5	Sample gas cooler EGK 1S		
6	Automatic condensate drain or perist. pump		

For models and specs of components see individual data sheets.

Heat Exchanger

The energy content of the sample gas and, as a result, the required cooling capacity of the gas cooler is determined by 3 parameters: gas temperature ϑ_G, dewpoint τ_e (moisture content) and flow v. The outlet dew point rises with increasing energy content (heat) of the gas. The required cooling capacity is determined by the maximum acceptable level of the outlet dew point.

The following table shows cooler performance assuming the following conditions: τ_e=65°C and ϑ_G=90°C. Indicated is the v_{max} in Nl/h cooled air (i.e. after the moisture has condensed). If the actual values stay below the parameters τ_e and ϑ_G, v_{max} can be increased. For example (TG), instead of τ_e= 65°C, ϑ_G = 90°C and v = 250 l/h the values τ_e=50°C, ϑ_G=80°C and v=350 l/h could be achieved.

Please contact one of Buhler's application specialists for assistance and further information.

Heat Exchanger	**TS**	**TV-SS**	**DTS**	**DTV** [3]
Flow rate v_{max} [1]	530 l/h	155 l/h	2 x 250 l/h	2x 115 l/h
Inlet dewpoint $\tau_{e,max}$ [1]	80 °C	68 °C	80 °C	65 °C
Gas inlet temperature. $\vartheta_{G,max}$ [1]	180 °C	140 °C	180 °C	140°C
Max. cooling capacity Q_{max}	450 kJ/h	120 kJ/h	450 kJ/h	185 kJ/h
Gas pressure p_{max}	160 bar	3 bar	25 bar	2 bar
Pressure drop Δp (v=150 l/h)	8 mbar	8 mbar	each 5 mbar	each 15 mbar
Dead volume V_{tot}	69 ml	129 ml	28 / 25 ml	21 / 21 ml
Sample gas connections	G 1/4" i [2]	DN 4/6	tube 6 mm	DN 4/6
Condensate out connections	G 3/8" i [2]	G 3/8" i	tube 10 mm	DN 4/6

[1] with maximum heat transfer of the heatexchanger and max. cooling capacity of the cooler [2] NPT-threads upon request [3] Con only be used with peristaltic pumps

Please indicate with order

Cooler EGK 1 S (without display, incl. PVDF heat exchanger)

45 65 099S1V	EGK 1 S 230V, 50/60Hz with TV-SS, single
45 65 099S2V	EGK 1 S 230V, 50/60Hz with DTV, double*
45 66 099S1V	EGK 1 S 115V, 50/60Hz with TV-SS, single
45 66 099S2V	EGK 1 S 115V, 50/60Hz with DTV, double*

Cooler EGK 1 SD (with display, without heat exchanger)

45 65 099	EGK 1 SD 230V, 50/60Hz
45 66 099	EGK 1 SD 230V, 50/60Hz

accessories

45 10 023	Heat exchanger TS, stainless steel 1.4571
45 01 004	Heat exchanger TV-SS, single stream, PVDF
45 01 026	Heat exchanger DTS, Stainless steel 1.4571 dual
45 01 028*	Heat exchanger DTV, double stream, PVDF
45 10 122	Peristaltic pump 230 V, 0,3 l/h, separate mounting
45 10 222	Peristaltic pump 115 V, 0,3 l/h, separate mounting
44 10 001*	Automatic condensate drain 11 LD V 38
44 10 004*	Automatic condensate drain AK 20, PVDF
44 10 005*	Condensate vessel GL 1; glass, 0,4 l
44 10 019*	Condensate vessel GL 2; glass, 1 l

* Notice: DTV only with peristaltic pump