

Sample Gas Cooler EGK 1/2



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

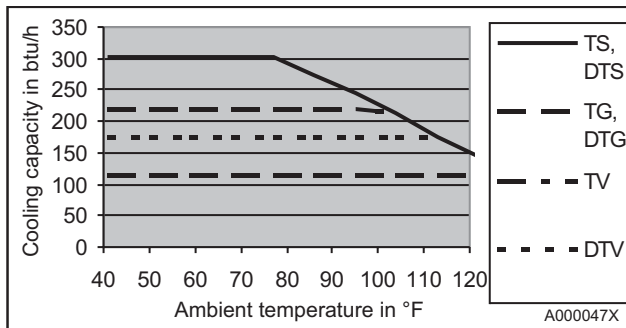
Condensate is removed either by peristaltic pumps, by automatic condensate drains or condensate vessels.

- **Compact design**
- **Single or dual gas streams**
- **Heat exchangers made of stainless steel, Duran glass and PVDF**
- **Bühler Constant Regulating System**
- **Self-checking**
- **Status alarm**
- **Cooling block temperature display**
- **Cooling capacity 300 Btu/hr**
- **Dewpoint stability 0.2 °F**
- **CFC-free**

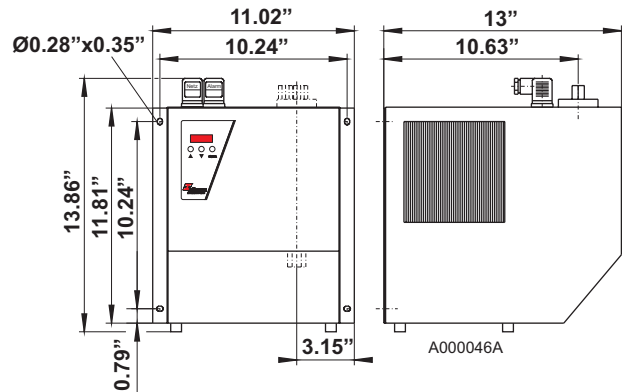
Technical Data

Ready for operation	Max. 15 minutes
Cooling capacity (at 77°F)	300 Btu/hr
Ambient temperature	40 - 120 °F
Dewpoint (set at factory)	approx. 40 °F
Dewpoint variations static	0.2 °F
Over full operation range	± 2.7 °F
Power supply	115 or 230V, 50/60 Hz, Plug: DIN 43650
Power consumption	290/260 VA, fuse (external) 10
Alarm output:	Max. 250V, 2 A, 50 VA Plug: DIN 43650
Protection class	IP 20
Housing Material	Stainless steel
installation	Table or wall mounting
Packing dimensions	approx. 15.5 x 12 x 16 inches
Weight incl. heat exchangers	approx. 33 lb.

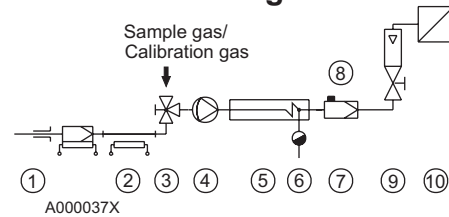
Performance Data



Dimensions



Typical Installation Diagram:



- 1 Sample probe
 - 2 Sample tube
 - 3 3-way valve
 - 4 Sample gas pump
 - 5 Sample gas cooler EGK-1/2
 - 6 Automatic condensate drain or perist. pump
 - 7 Moisture detector
 - 8 Fine filter
 - 9 flowmeter
 - 10 Analyzer
- 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 , dew point 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: $\tau_e=120^\circ\text{F}$ and $\vartheta_G=160^\circ\text{F}$. Indicated is the v_{max} in lpm 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 $\tau_e=120^\circ\text{F}$, $\vartheta_G=160^\circ\text{F}$ and $v=5.7$ lpm the values $\tau_e=105^\circ\text{F}$, $\vartheta_G=160^\circ\text{F}$ and a maximum flow rate of $v=7.1$ lpm could be achieved.

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

Heat Exchanger	TS	TG	TV-SS	DTS (DTS-6 ³⁾)	DTG	DTV ³⁾
Flow rate v_{max} ¹⁾	8.8 lpm	4.7 lpm	2.6 lpm	2 x 4.2 lpm	2 x 2.3 lpm	2 x 1.9
Inlet dewpoint $\tau_{e,\text{max}}$ ¹⁾	180 °F	180 °F	150 °F	180 °F	150 °F	150 °F
Gas inlet temperature $\vartheta_{G,\text{max}}$ ¹⁾	360 °F	285 °F	285 °F	360 °F	285 °F	285 °F
Max. cooling capacity Q_{max}	425 Btu/hr	220 Btu/hr	115 Btu/hr	425 Btu/hr	220 Btu/hr	175 Btu/hr
Gas pressure p_{max}	2300 psi	43 psi	43 psi	360 psi	43 psi	29 psi
Pressure drop Δp ($v=150$ l/h)	0.1 psi	0.1 psi	0.1 psi	each 0.1 psi	each 0.1 psi	each 0.1 psi
Dead volume V_{tot}	4.2 cu. in.	2.9 cu. in.	7.9 cu. in.	1.7 / 1.5 cu. in.	1.7 / 1.5 cu. in.	1.3 / 1.3 cu. in.
Sample gas connections	G 1/4" i ²⁾	GL 14	DN4/6	tube 6 mm	GL 14	DN 4/6
Condensate outlet connections	G 3/8" i ²⁾	GL 25	G3/8" i	tube 10 mm (6 mm)	GL 18	DN 4/6

¹⁾ with maximum heat transfer of the heat exchanger and max. cooling capacity of the cooler

²⁾ NPT-threads upon request

³⁾ Can only be used with peristaltic pumps

Please indicate with order

Cooler

45 65 999	EGK-1/2 230 V 50/60Hz
45 66 999	EGK-1/2 115 V 50/60Hz

Heat exchanger

45 10 023	TS, stainless steel 1.4571
45 10 013	TG, Duran glass
45 01 004	TV-SS, PVDF
45 01 026	DTS, stainless steel 1.4571, dual
45 01 023	DTS-6, stainless steel 1.4571, dual
45 01 027	DTG, Duran glass, dual
45 01 028	DTV, PVDF, dual (condensate pump required)

Accessories

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
45 10 130	1 peristaltic pump 230 V, 0.005 lpm, built-in
45 10 230	Second peristaltic pump 230 V, 0.005 lpm, built-in
45 10 131	1 peristaltic pump 115 V, 0,3 l/h, built-in
45 10 231	Second peristaltic pump 115 V, 0.005 lpm, built-in
45 10 122	Per. pump 230 V, 0.005 lpm, separate mounting
45 10 222	Per. pump 115 V, 0.005 lpm, separate mounting