

# Sample gas cooler EGK 4 S



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

The heart of any cooling system is the cooling block. Bühler gas coolers feature cooling blocks made of aluminum which accommodate highly efficient heat exchangers available in a variety of materials such as stainless steel, glass or PVDF. The temperature of the cooling block is regulated by the **Bühler Constant Regulating System** featuring a straight and constant temperature value. Maintenance-free models accommodating up to four gas streams are available.

The coolers status can be monitored by a display of the cooling block temperature and a LED which blinks until the cooler reaches the valid temperature range.

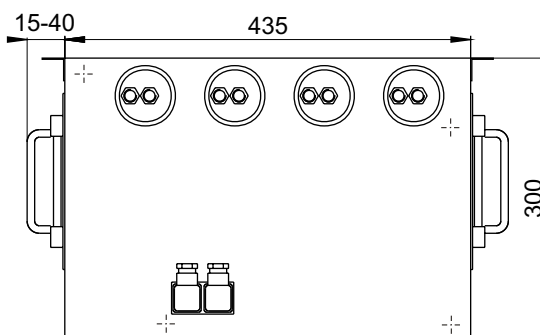
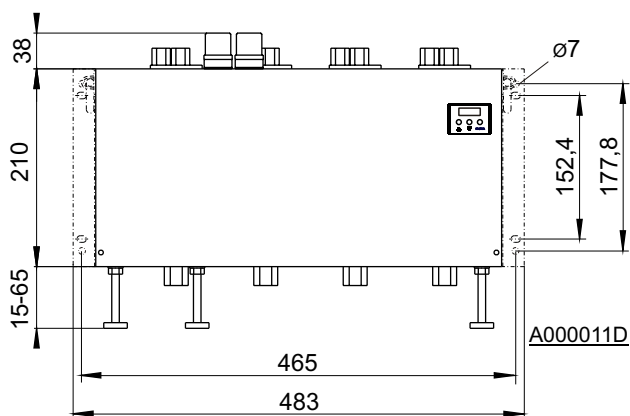
The cooler can be supplied with feet adjustable from about 1,5 to 6,6 cm and either mounting brackets or handles.

- **Compact design**
- **Easy installation**
- **Wall, rack or table mountable**
- **Reliable cooling system**
- **CFC-free**
- **Up to 4 gas streams**
- **Heat exchangers in SS, glass or PVDF**
- **Nominal capacity 800 kJ/h**
- **Dew point stability 0.2 °C**
- **Temperature display**
- **Feet, handles or mounting brackets available**

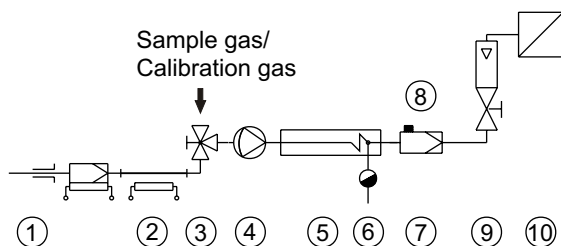
## Technical Data

Ready for operation	max. 15 minutes
Cooling capacity (at 25°C)	800 kJ/h
Ambient temperature	+5 °C to 50 °C
Dew point (set at factory)	approx. 5 °C
Dew point variations static	0,2 K
Over full operation range	± 2 °C
Power supply	115 V or 230 V, 50/60 Hz
Power consumption	170 VA / 500 VA
Fuse	10 A
Alarm output	230 V AC/150 V DC, 2 A, 30 VA change over contact
Protection class	IP 20
Housing material	stainless steel
Installation	wall, rack or table mounting
Dimensions (H x W x D)	approx. 510 mm x 355 mm x 450 mm
Weight (incl. 4 heat exchangers)	max. 32 kg

## Dimensions (mm)



## Typical Installation Diagram



A000037X

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

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  $\vartheta_G$ , dewpoint  $\tau_e$  (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:  $\tau_e=65^\circ\text{C}$  and  $\vartheta_G=90^\circ\text{C}$ . Indicated is the  $v_{\text{max}}$  in l/h cooled air (i.e. after the moisture has condensed). If the actual values stay below the parameters  $\tau_e$  and  $\vartheta_G$ ,  $v_{\text{max}}$  can be increased. For example (TG), instead of  $\tau_e=65^\circ\text{C}$ ,  $\vartheta_G=90^\circ\text{C}$  and  $v=250$  l/h the values  $\tau_e=50^\circ\text{C}$ ,  $\vartheta_G=80^\circ\text{C}$  and  $v=350$  l/h could be achieved.

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

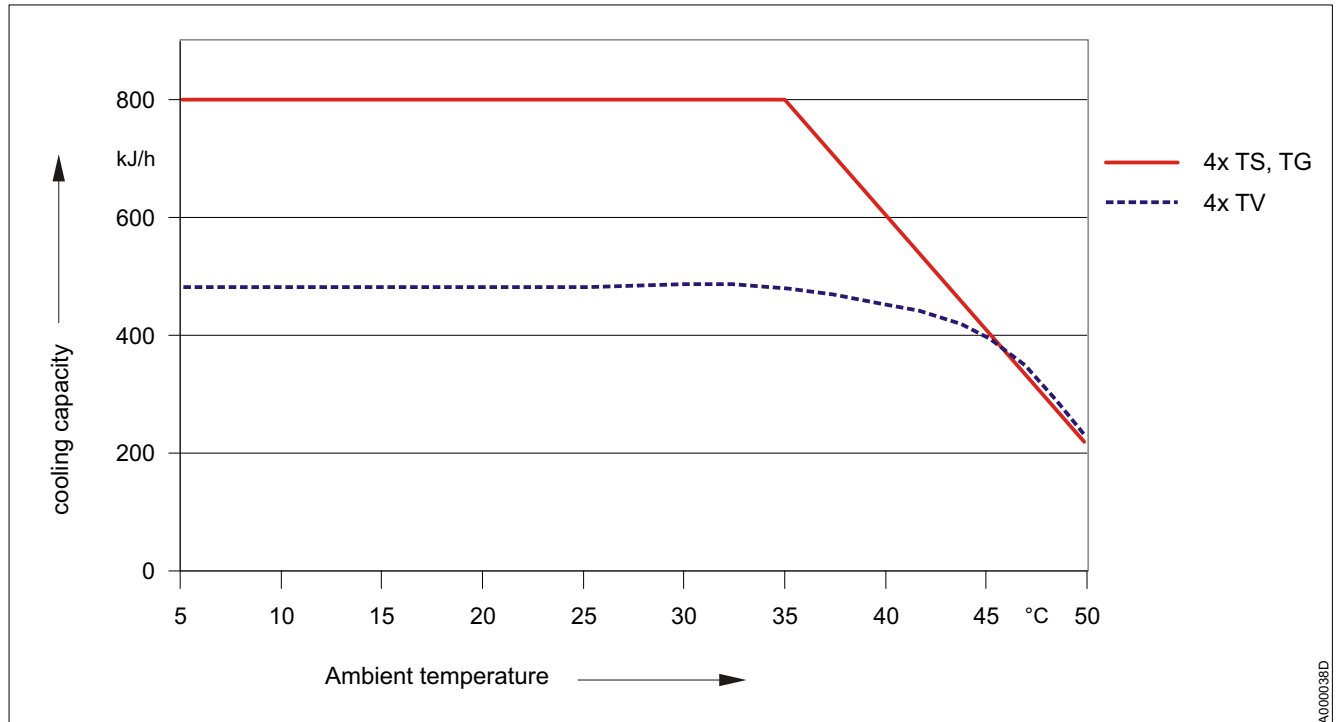
Heat Exchanger	TS TS-I <sup>2)</sup>	TG TG	TV TV-I <sup>2)</sup>
Flow rate $v_{\text{max}}$ <sup>1)</sup>	530 l/h	280 l/h	150 l/h
Inlet dewpoint $\tau_{e,\text{max}}$ <sup>1)</sup>	80 °C	80 °C	65 °C
Gas inlet temperature $\vartheta_{G,\text{max}}$ <sup>1)</sup>	180 °C	140 °C	140 °C
Max. cooling capacity $Q_{\text{max}}$	450 kJ/h	230 kJ/h	120 kJ/h
Gas pressure $p_{\text{max}}$	160 bar	3 bar	3 bar
Pressure drop $\Delta p$ ( $v=150$ l/h)	8 mbar	8 mbar	8 mbar
Dead volume $V_{\text{tot}}$	69 ml	48 ml	129 ml
Sample gas connections (metric)	G 1/4"	GL 14 (6 mm) <sup>3)</sup>	DN 4/6
(US)	NPT 1/4"	GL 14 (1/4") <sup>3)</sup>	1/4"-1/6"
Condensate out connections (metric)	G 3/8"	GL 25 (12 mm) <sup>3)</sup>	G 3/8"
(US)	NPT 3/8"	GL 25 (1/2") <sup>3)</sup>	NPT 3/8"

<sup>1)</sup> with maximum heat transfer of the heat exchanger and max. cooling capacity of the cooler

<sup>2)</sup> Types marked "I" have NPT-threads or US tubes, respectively

<sup>3)</sup> Inner diameter gasket

## Performance Data



## Please indicate with order

Please extract the part number for the cooler fulfilling your requirements from the type code below.

**Please note:** Each gas path should be equipped with a peristaltic pump or an automatic condensate drain.

<b>Part No.</b>	<b>4</b>	<b>5</b>	<b>7</b>					<b>0</b>	<b>0</b>	<b>EGK 4S</b>
<b>Type</b>										
	0									Wall mount
	1									19"-rack mount
<b>Power Supply</b>										
	1									115V metric fittings
	2									230V metric fittings
	3									115V US fittings
	4									230V US fittings
<b>Gas Paths</b>										
	0									Without heat exchanger
	1									1 Gas path
	2									2 Gas paths
	3									3 Gas paths
	4									4 Gas paths
<b>Material Heat Exchanger / Version</b>										
	0	0								Without heat exchanger
	1	0								Single heat exchanger stainless steel / (TS or TS-I)
	2	0								Single heat exchanger glass / (TG)
	3	0								Single heat exchanger PVDF/ (TV or TV-I)
<b>Condensate Discharge<sup>1)</sup></b>										
	0									Without condensate discharge
<b>Accessories</b>										
									0	Without accessories
									1	With mounting brackets
									2	With feet
									3	With mounting brackets and feet
									4	With handles
									5	With mounting brackets and handles
									6	With feet and handles
									7	With mounting brackets, feet and handles

<sup>1)</sup> Peristaltic pumps may be installed to the cooler using a mounting bracket or must be installed separately.  
The power supply of the pump must be the same as for the cooler itself.  
Automatic condensate drains must be installed separately.

## 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
912 40 30 104	Peristaltic pump 230 V, 0,3 l/h, for separate mounting
912 40 30 105	Peristaltic pump 115 V, 0,3 l/h, for separate mounting
45 70 008	Mounting bracket for up to 4 peristaltic pumps