

Sample Gas Cooler EGK 2 Ex



Accurate measurements of gas components require gas samples with stable dew point. The gas cooler is an important part in the gas conditioning system. The dew point is lowered to a definite point to prevent moisture from condensing in expensive analyser parts.

Compressor coolers type EGK assure a stable outlet dew point due to their reliable design. The cooling system is filled with a fluorchlorocarbonfree coolant and free of maintenance. The main part of the cooling system is a cooling block assuring an even heat dissipation. One or two highly efficient heat exchangers are inserted into the cooling block.

The controller is self-checking. Deviation of more than 3K off the preset will be signalled by a status output. A bicolour LED on the front shows 4 different operation conditions.

Depending on the system's basic principle the condensate is removed either into condensate vessels or by automatic condensate drainers which can be directly attached to the heat exchangers within the coolers outer contour.

- **ATEX certificate Zone 1 (Cat. 2G)**
- **FCKW free**
- **nominal cooling capacity 615 kJ/h**
- **1 or 2 heat exchangers can be inserted: up to 4 gas paths**
- **selfchecking with status output**
- **4 operational conditions displayed**
- **simple operation and test**
- **very easy to install**
- **condensate draining can be mounted inside of outer shape**

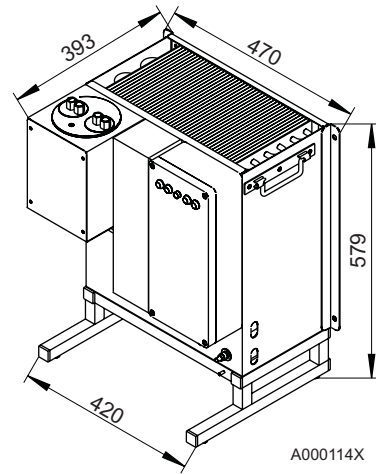
Technical data

ATEX-class	II 2 G EEx p qem [ia] IIC T4
ready for operation	after max. 20 minutes
cooling capacity (at 25°C)	> 615 kJ/h (170W)
ambient temperature	+0..45°C
gas outlet dewpoint (preset)	approx. 5 °C
dewpoint stability static	± 0,2 K (with st. steel)
	± 0,5 K (with PVDF)
Over whole spec. Range:	± 2 K
power supply	230V, 50 Hz or 115V, 60 Hz
power consumption	250 VA (230V) 300VA (115V)
fuse	motor protection switch
potential-free status outputs (fail-safe)	250 V / 3 A AC 24 V / 1 A DC
protection class electrically	IP 54
Housing material	stainl. steel / polyester
installation	upright or against wall
shipping dimensions approx.	700 x 500 x 500 mm
shipping weight incl. 2 heat exchangers	approx. 37 kg

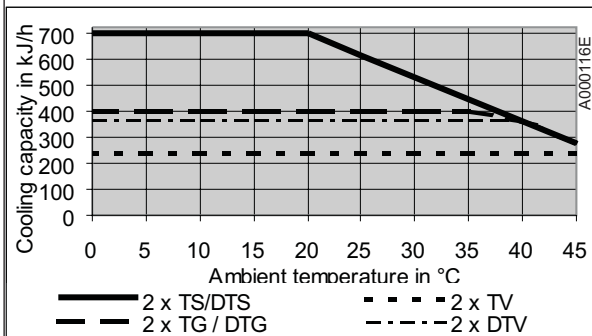
Display

Status LED with 4 conditions:	
Green:	temperature in range
Green flashing:	temperature in range, compressor is running
Red:	temperature off range, cooling operation
Red flashing:	Cooler stooped or service required

Dimensions



Performance data



Heat exchanger

The energy content of the sample gas and as a result the required cooling capacity is determined by 3 parameters: gas temperature t_g , dewpoint t_d (moisture content) and flow Q. The outlet dew point raises with increasing the energy content of the gas due to physical rules. The acceptable cooling capacity is determined by a tolerated raise of the outlet dew point.

The following limits are set for $t_d=65^\circ\text{C}$ and $t_g=90^\circ\text{C}$. Indicated is the Q_{max} in NI/h cool air i.e. after the moisture has condensed.

If the real values stay below the parameters t_d and t_g , Q_{max} can be increased. As an example instead of $t_d=65^\circ\text{C}$, $t_g=90^\circ\text{C}$ and $v=250$ l/h the values $t_d=50^\circ\text{C}$, $t_g=80^\circ\text{C}$ and $v=350$ l/h could be accepted.

Please let us know if you want assistance or use our cooler adaption programme.

Heat exchanger	TS	TG	TV	DTS	DTG	DTV ⁴⁾
flow rate v_{max} ¹⁾	400 l/h	250 l/h	125 l/h	2*200 l/h	2*125 l/h	2*115 l/h
inlet dewpoint $t_{d,\text{max}}$ ¹⁾	80 °C	80 °C	65 °C	80 °C	65 °C	65 °C
gas inlet temperature $t_{g,\text{max}}$ ^{1) und 3)}	180(135) °C	135°C	135 °C	180(135) °C	135 °C	135 °C
max. cooling capacity Q_{max}	340 kJ/h	200 kJ/h	120 kJ/h	340 kJ/h	200 kJ/h	185 kJ/h
gas pressure p_{max}	160 bar	3 bar	3 bar	25 bar	3 bar	2 bar
pressure drop p ($v=150$ l/h)	8 mbar	8 mbar	8 mbar	each 5 mbar	each 5 mbar	each 15 mbar
death volume V_{tot}	69 ml	48 ml	129 ml	28/25 ml	25/25 ml	each 21 ml
sample gas connections	G 1/4" i ²⁾	GL 14	DN 4/6	tube 6mm	GL 14	DN 4/6
condensate out connections	G 3/8" i ²⁾	GL 25	G 3/8" i	tube 10mm	GI184	DN 4/6

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

²⁾ NPT-threads upon request

³⁾ Values in parentheses due to temperature class

⁴⁾ Use of automatic condensate drainers and glass vessels not possible

Please indicate with order

Coolers

45 90 999	EGK 2 Ex, 230V / 50 Hz
45 91 999	EGK 2 Ex, 115V / 60 Hz

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	DTSstainless steel 1,4571, two streams
45 01 027	DTG Duran glass, two streams
45 01 028	DTV, PVDF, two streams

Motor protection switches

The cooler has to be connected via a motor protection switch

9132020009	Motor protection switch mounted outside of hazardous area for cooler 230V/50Hz
9132020030	Motor protection switch mounted outside of hazardous area for cooler 115V/60Hz
9132020032	Motor protection switch mounted inside of hazardous area for cooler 230V/50Hz
9132020033	Motor protection switch mounted inside of hazardous area for cooler 115V/60Hz

Accessories

44 10 001	Automatic condensate drainer 11 LD V 38 (SS)
44 10 004	Automatic condensate drainer AK 20 (PVDF)
44 10 005	Condensate vessel GL 1; glass, 0,4 l
44 10 019	Condensate vessel GL 2; glass, 1 l