



ECS-1G/EC-F, ECS-4G/EC-FD

## Gas Cooler Series EC®

Version ECS and EC-EX  
for 4x 250 NI/h



### Special Features

- Jet Stream heat exchangers in 3 standard materials
- Ambient temperature up to 50°C
- Outlet dew point adjustable from +2 °C to +7 °C
- Dew point stability  $\pm 0,25^{\circ}\text{C}$
- Status alarm contact standard
- Optimum reliability
- Self-controlled
- TA-Luft approved
- Explosion proof version according to ATEX for zone 1
- 100% CFC-free

### Application

ECS and EC-EX gas coolers are used in gas analysis to lower the dew point of humid to avoid condensation in the analyser. An extremely stable gas dew point avoids water vapour cross-sensitivity and volumetric errors.

### Description

The electronically controlled compressor cooling system and the special design of the jet stream heat exchanger guarantees optimum dew point reduction to a low, stable value and secures condensate formation. No external pre-draining is needed.

Up to 4 peristaltic pumps can be installed in the ECS to drain condensate. Otherwise the condensate must be removed with traps or collected in vessels.

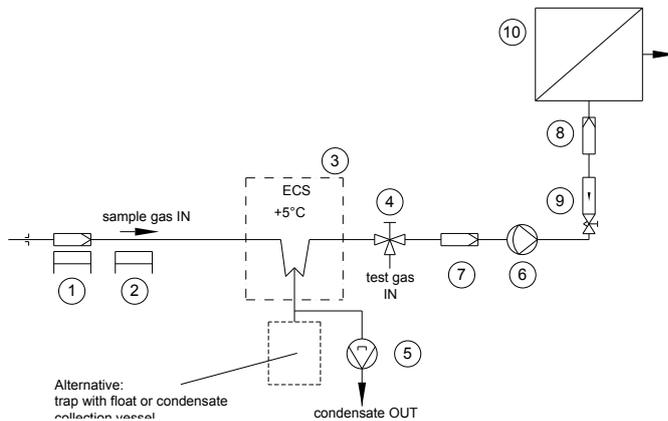
A fan unit EC-F for ambient temperatures  $>40^{\circ}\text{C}$  or a peristaltic pump unit EC-D is available to fit the base of the ECS for condensate drainage. The peristaltic pump unit is also available as version EC-FD with additional fans to force the air ventilation.

The new design enables up to 4 heat exchangers to be incorporated either at the factory or later, without any problem. They can be connected in series or parallel.

Heat exchangers are available in various materials depending on the application. LED indicate the operating conditions. A temperature deviation of  $\pm 3^{\circ}\text{C}$  triggers an alarm. The gas coolers are self-controlling and maintenance-free in operation.

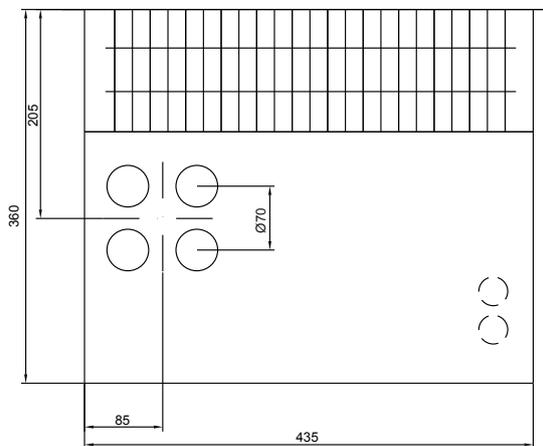
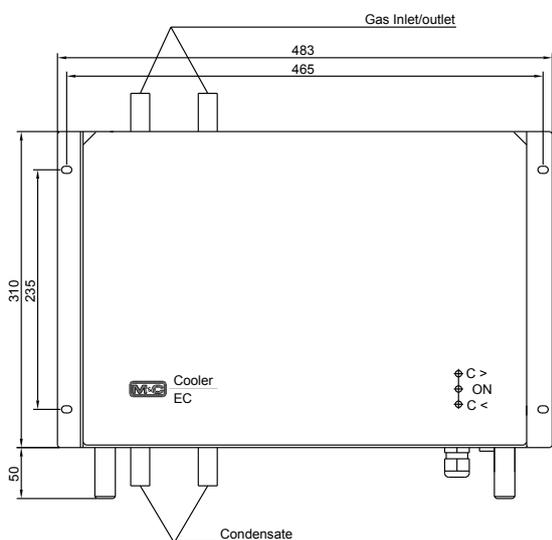
## Application example for ECS

- 1 Heated filter sample probe SP210-H or SP2000-H
- 2 Heated sample line 4M4/6
- 3 Cooler ECS
- 4 3-way ball valve 3L/PV-1
- 5 Peristaltic pump SR25.2
- 6 Diaphragm pump MP47 or MP06/12 or N5KP
- 7 Fine filter FP-2T-D with liquid alarm LA1
- 8 Aerosol filter CLF-5 /W optional according to application
- 9 Flow meter FM10 or FM40, 25-250 NI/hr
- 10 Analysers f. e. PMA100



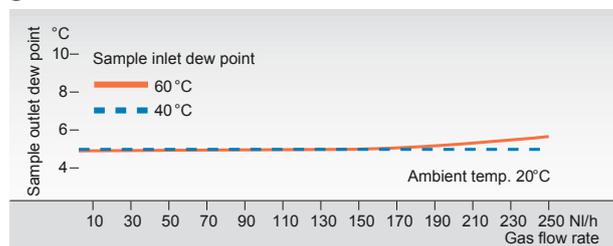
## Dimensions

### Gas cooler ECS...

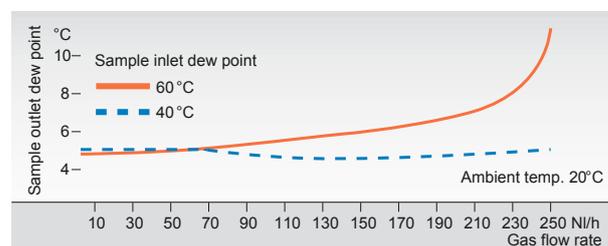


Dimensions in mm

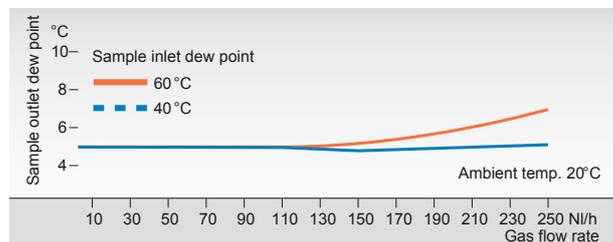
### Cooler type EC-G with heat exchanger out of glass



### Cooler type EC-PV with heat exchanger out of PVDF



### Cooler type EC-SS with heat exchanger out of SS316Ti



## Technical Data

Gas Cooler Series EC®	ECS	EC-EX
Part number with glass heat exchanger	02 K 1500 (a)	02 K 5000 (a)
Part number with stainl. steel heat exchanger	02 K 2500 (a)	02 K 5010 (a)
Part number with PVDF heat exchanger	02 K 3500 (a)	02 K 5020 (a)
Number of heat exchanger	1 optional to 4	
Gas flow rate per heat exchange	250 NI/h**	
Ambient temperature	+5 to +45 °C, with option EC-F = +5 to +50 °C	+5 to 45 °C
Storage temperature	-20 to +60 °C	
Sample outlet dew point	range of adjustment: +2 °C ..... +7 °C, factory setting: +5 °C	
Dew point stability	at constant conditions ±0,25 °C	
Sample inlet temperature	max. 180 °C**	
Sample inlet dew point	max. 80 °C**	
Total cooling power	max. 520 KJ/h at 25° C ambient temperature	
Power consumption	280VA, Start up current at 230V= 7,9A	
Main connection	230V ±10%, 50Hz, optional 115V ±10%, 60Hz	230V ±10%, 50Hz, optional 115V ±10%, 50-60Hz
Ready for working	< 30 min.	
Electrical connection	2,5 mm² terminals	
Status alarm: ECS 2 changeover contacts	Contact rating: 250V, 2A, 500VA, 50W, Alarm point: ΔT ±3 °C zu Tsoll	
Status alarm: EC-EX 1 changeover contact	Contact rating: 220V, 2A, 100VA, 50W, Alarm point: ΔT ±3 °C zu Tsoll	
Case protection	IP 20; EN 60529	
Electrical standard	EN 61010	II2G EEx p, e, d, q, (Ib) IIC T4
Case color	RAL 9003	
Method of mounting	19" rack- or wallmounting	
Dimension / Weight	84HP x 7U x 360 mm / 31 kg	84HP x 7U x 450 mm / 40 kg

### Options

#### Heat exchanger execution

	Borosilicate glass	PVDF	stainless steel 316Ti
Material of heat exchanger	Borosilicate glass	PVDF	stainless steel 316Ti
Part number	02 K 9100	02 K 9300	02 K 9200
Admissible gas pressure bar g	3 <sup>2)</sup> / 2 <sup>3)</sup>	3 / 2 <sup>3)</sup>	10 bar
Sample gas connection	GL18-6 ø6 mm 8 o. 10 mm*	G 1/4" i	G 1/4" i NPT*
Condensate connection	GL25-12 ø12 mm 10 o. 8 mm*	G 3/8" i	G 3/8" i NPT*
ΔP per heat exchanger at 300 l/h	1 mbar		
Dead volume per heat exchanger	70 ml		

\* Optional

\*\* Maximum values in technical datas must be rated in consideration of total cooling capacity at 25 °C ambient temperature and an outlet dew point of 5 °C.

1) Others on request.

2) With GL-Anschlussadapter.

3) With SR25.1 max. 2 bar abs.

(a) Addition to part number for 115V execution

GL adapter and tube fittings for the connection of different tube diameters at the heat exchanger see chapter 11, data sheet 11.5 and 11.6.

## Gas cooler ECS...

Types	P.N.	Execution in wall mounting housing <sup>1)</sup>
ECS 1-G	02 K 1500	Gas cooler with 1 heat exchanger out of Borosilicate glass, epth of housing 360 mm, 230V, 50Hz
ECS-1-SS	02 K 2500	Gas cooler with 1 heat exchanger out of stainless steel, depth of housing 360 mm, 230V, 50Hz
ECS-1-PV	02 K 3500	Gas cooler with 1 heat exchanger out of PVDF, depth of housing 360 mm, 230V, 50Hz
/115V	02 K ...A	Power EC/ECS 115V 60Hz
EC-EX-1G	02 K 5000	Gas cooler with 1 heat exchanger out of Borosilicate glass, depth of housing 450 mm, 230V, 50Hz, EEx execution
EC-EX-1SS	02 K 5010	Gas cooler with 1 heat exchanger out of stainless steel, depth of housing 450 mm, 230V, 50Hz, EEx execution
EC-EX-1PV	02 K 5020	Gas cooler with 1 heat exchanger out of PVDF, depth of housing 450 mm, 230V, 50Hz, EEx execution
/115V	02 K ...A	Power EC-EX 115V 60Hz

### Another heat exchanger

EC-G	02 K 9100	Jet stream heat exchanger out of Borosilicate glass
EC-G-90°	02 K 9150	Jet stream heat exchanger out of Borosilicate glass with 90° bend at the gas connectors
EC-SS	02 K 9200	Jet stream heat exchanger out of stainless steel 316Ti
EC-PV	02 K 9300	Jet stream heat exchanger out of PVDF

### Options

/PT 100	02 K 9500	PT 100 Sensor built in cooling block of EC / ECS for external temperature controlling
EC-F*	02 K 9530	Universal unit with 2 fans and dust filter for mounting under EC / ECS cooler, completely mounted, 230V 50Hz or 115V 60Hz, not at EC-EX
EC-FD*	02 K 9540	Universal unit for up to 4 peristaltic pumps with 2 fans and dust filter for mounting under EC / ECS cooler, incl. one peristaltic pump, completely mounted, 230V 50Hz or 115V 60Hz, not at EC-EX
EC-D*	02 K 9535	Universal unit for up to 4 peristaltic pumps for mounting under EC / ECS cooler, incl. one peristaltic pump, completely mounted, 230V 50Hz or 115V 60Hz, not at EC-EX
/115V	02K95..A	Universal unit, power 115V 60Hz
/SR25.2	01P9140	Extra charge for 1 pc. peristaltic pump SR25.2 incorporated in the front plate of the cooler, compl. installed, cooler weight plus 0,6 kg per pump

1) 19°- housing on request - please note on your order

\* Universal units, peristaltic pumps, collecting vessels and fittings are presented in separate data sheets.

### Order example:

1 gas cooler ECS-2G, power 115V 60Hz, with 2 heat exchangers out of glass and a universal unit EC-FD with 2 peristaltic pumps  
P.N. 1x02K1500A + 1x02k9100 + 1x02K9540A + 1x01P1000 (peristaltic pump SR25.1) + 1x01P9100

## Gas cooler ECS... with SR25.2 incorporated in the front plate of the cooler

