



EC-1G/EC-F, EC-4G/EC-FD®

## Gas Cooler Series EC®

### Version EC, ECS and EC-Ex for 4x 250 NI/h

- **Patented Jet Stream heat exchangers in 3 standard materials**
- **Ambient temperature up to 50°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

**EC** 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 crosssensitivity and volumetric errors.

#### Description

The electronically controlled compressor cooling system and the special design of the jet stream heat exchanger – **an M&C patent** – 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 **EC** to drain condensate. Otherwise the condensate must be removed with traps or collected in vessels.

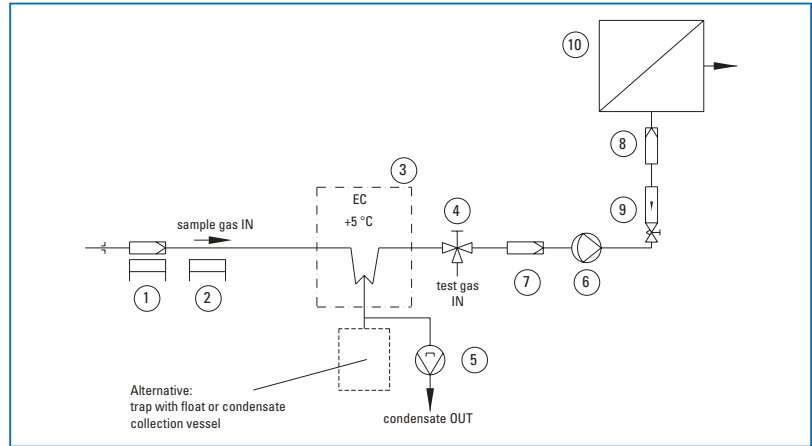
A fan unit **EC-F** for ambient temperatures  $>40^\circ\text{C}$  or a peristaltic pump unit **EC-D** is available to fit the base of **EC/ECS** for condensate drainage. The peristaltic pump unit is also available as version **EC-FD** with additional fans to force the airventilation.

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.

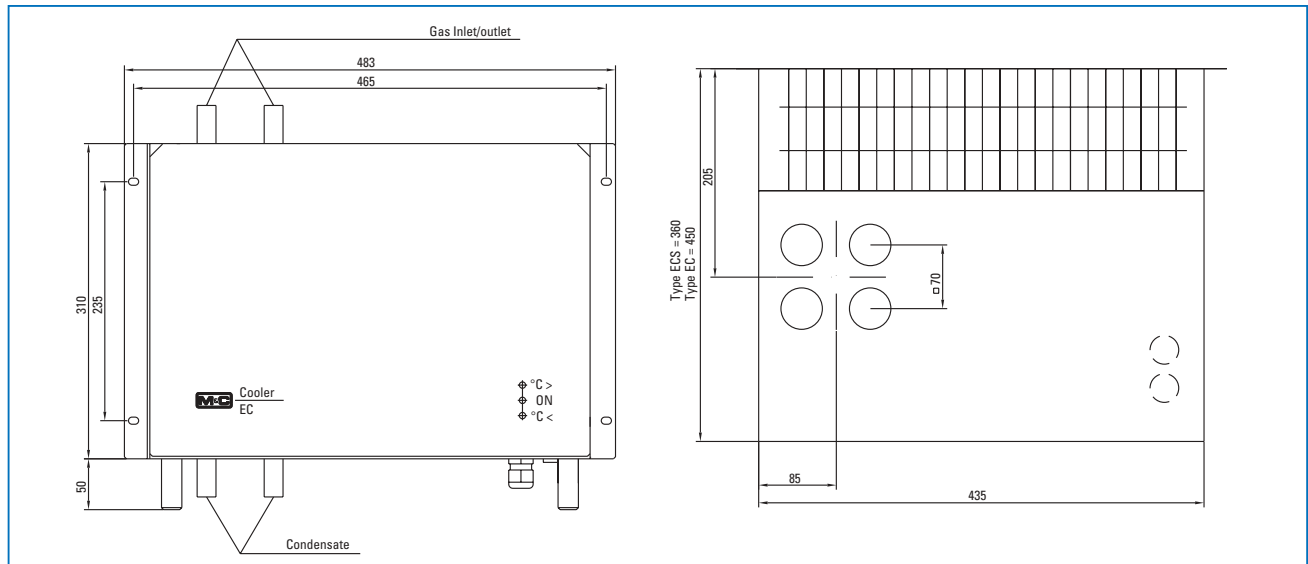
### Application example for EC

- 1 Heated filter sample probe SP210-H or SP2000-H
- 2 Heated sample line 4M4/6
- 3 Cooler EC / 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



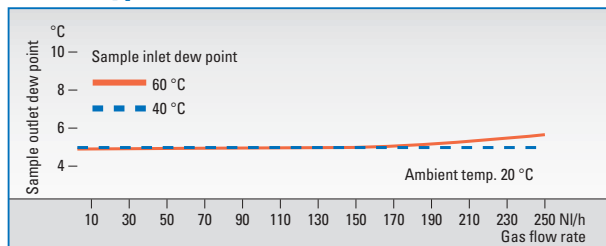
### Dimensions

#### Gas Cooler EC...

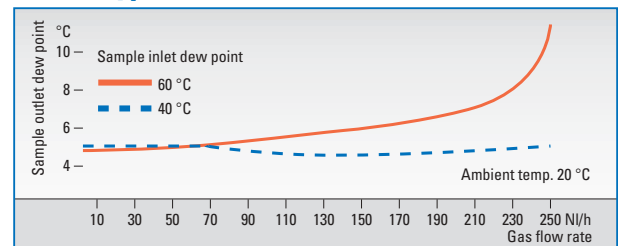


Dimensions in mm

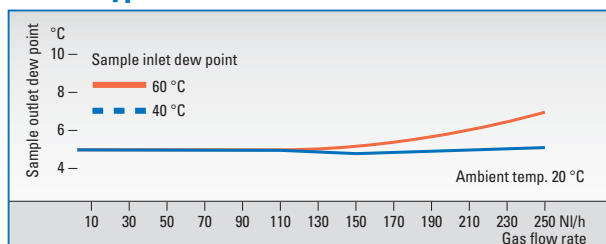
#### Cooler type EC-G



#### Cooler type EC-PV



#### Cooler type EC-SS



## Technical Data

Gas Cooler Series EC <sup>o</sup>	EC	ECS	EC-Ex
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
Sample outlet dew point	Set in factory +5 °C ±1 °C, range of adjustment 0-20 °C		
Dew point stability	±0,25 °C (inlet dew point 40 °C and flow rate 250 l/h per heat exchanger)		
Sample inlet temperature	max. 180 °C**		
Sample inlet dew point	max. 80 °C**		
Total cooling power	max. 520 KJ/h at 25° C ta		
Power consumption	280VA, Start up current at 230V= 7,9A		
Main connection	230V ±10%, 50Hz, optional 115V ±10%, 60Hz		
Ready for working	< 30 min.		
Electrical connection	2,5 mm <sup>2</sup> terminals		
Status alarm: EC/ECS 2 changeover contacts	Contact rating: 250V, 2A, 500VA, 50W, Alarm point: ΔT ±3 °C zu T <sub>soil</sub>		
Status alarm: EC-Ex 1 changeover contact	Contact rating: 220V, 2A, 100VA, 50W, Alarm point: ΔT ±3 °C zu T <sub>soil</sub>		
Case protection	IP 20; EN 60529		
Electrical standard	EN 61010	⚡ IIG EEx p, e, d, q, (ib) IIC T4	
Case color	RAL 7032		
Method of mounting	19" rack- or wallmounting		
Dimension / Weight	84HP x 7U x 450 mm / 32 kg	84HP x 7U x 360 mm / 31 kg	84HP x 7U x 450 mm / 40 kg
<b>Heat exchanger</b>			
Material of heat exchanger	Borosilicate glass	PVDF	stainless steel 316Ti
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 data must be rated in consideration of total cooling capacity at +25 °C ambient temperature.

- 1) Others on request.
- 2) With GL-Anschlussadapter.
- 3) With SR25.1 max. 2 bar abs.

## Gaskühler EC...

Types	P.N.	Execution in wall mounting housing <sup>1)</sup>	
EC 1-G	<b>02 K 1000</b>	Gas cooler with 1 heat exchanger out of Borosilicate glass,	depth of housing 450 mm, 230V, 50Hz
ECS 1-G	<b>02 K 1500</b>	Gas cooler with 1 heat exchanger out of Borosilicate glass,	depth of housing 360 mm, 230V, 50Hz
EC- 1-SS	<b>02 K 2000</b>	Gas cooler with 1 heat exchanger out of stainless steel,	depth of housing 450 mm, 230V, 50Hz
ECS-1-SS	<b>02 K 2500</b>	Gas cooler with 1 heat exchanger out of stainless steel,	depth of housing 360 mm, 230V, 50Hz
EC- 1-PV	<b>02 K 3000</b>	Gas cooler with 1 heat exchanger out of PVDF,	depth of housing 450 mm, 230V, 50Hz
ECS-1-PV	<b>02 K 3500</b>	Gas cooler with 1 heat exchanger out of PVDF,	depth of housing 360 mm, 230V, 50Hz
/115V	<b>02 K ...A</b>	Power EC/ECS 115V 60Hz	
EC-Ex-1G	<b>02 K 5000</b>	Gas cooler with 1 heat exchanger out of Borosilicate glass,	depth of housing 450 mm, 230V, 50Hz, EEx execution
EC-Ex-1SS	<b>02 K 5010</b>	Gas cooler with 1 heat exchanger out of stainless steel,	depth of housing 450 mm, 230V, 50Hz, EEx execution
EC-Ex-1PV	<b>02 K 5020</b>	Gas cooler with 1 heat exchanger out of PVDF,	depth of housing 450 mm, 230V, 50Hz, EEx execution
/115V	<b>02 K ...A</b>	Power EC-Ex 115V 60Hz	
<b>Another heat exchanger</b>			
EC-G	<b>02 K 9100</b>	Jet stream heat exchanger out of Borosilicate glass	
EC-G-90°	<b>02 K 9150</b>	Jet stream heat exchanger out of Borosilicate glass with 90° bend at the gas connectors	
EC-SS	<b>02 K 9200</b>	Jet stream heat exchanger out of stainless steel 316Ti	
EC-PV	<b>02 K 9300</b>	Jet stream heat exchanger out of PVDF	
<b>Options</b>			
/PT 100	<b>02 K 9500</b>	PT 100 Sensor built in cooling block of EC / ECS for external temperature controlling	
EC-F*	<b>02 K 9530</b>	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*	<b>02 K 9540</b>	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*	<b>02 K 9535</b>	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	<b>02K95..A</b>	Universal unit, power 115V 60Hz	
/SR25.1	<b>01P9100</b>	Extra charge for mounting a peristaltic pump SR25.1 into the cooler EC or universal unit EC-D, EC-FD, extra charge without pump, not at EC-Ex	

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 EC-2G, power 115V 60Hz, with 2 heat exchangers out of glass and a universal unit EC-FD with 2 peristaltic pumps

P.N. **1x02K1000A + 1x02K9100 + 1x02K9540A + 1x01P1000 (peristaltic pump SR25.1) + 1x01P9100**