



**ECP 1000-G**

## Peltier-Gas Cooler Series ECP®

Version ECP1000 with 1x 150 NI/h

Version ECP2000 with 2x 150 NI/h

Version ECP3000 with 1x 350 NI/h

3-1.1 10.96/06.06

### Special Features

With Jet-Stream heat exchanger available in three standard materials

Ambient temperature up to +50 °C

Outlet dew point adjustable from +2 °C to +15 °C

Dew point stability  $\pm 0,1$  °C

With Alarm contact

Small dimensions, light-weight

Optimum reliability

Self-controlling

### M&C Application

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

### M&C Description

The electronically controlled peltier cooler produced by M&C Products incorporates the "Jet-Stream" design of heat exchanger. This design induces condensate formation and guarantees optimum dew point reduction to a stable low value, eliminating the need for additional pre-drainage devices.

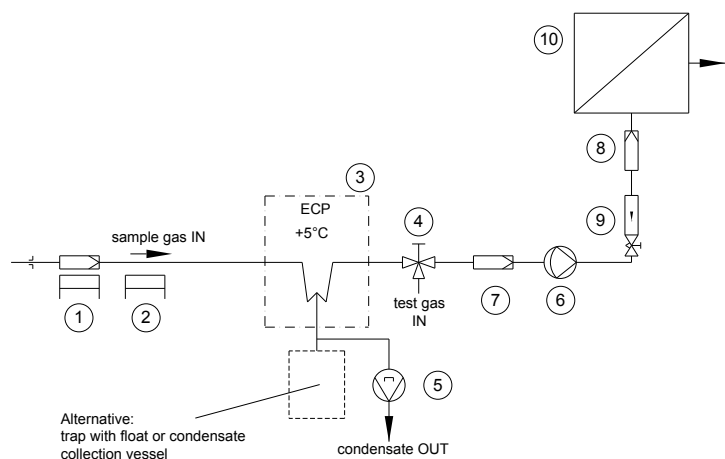
The condensate formed should be removed with a small peristaltic pump, simple trap or collection vessel. The simple construction employed enables heat exchanges of different materials to be used depending on the application.

The operating status of the cooler is displayed by three LED indicators, one each for over or under temperature alarm and one which pulsates showing the cooler is functioning correctly. The alarm status changes when the temperature deviates by  $\pm 3$  °C from the set point.

The compact lightweight design of this device makes it ideal for use in portable and compact continuous sample conditioning systems.

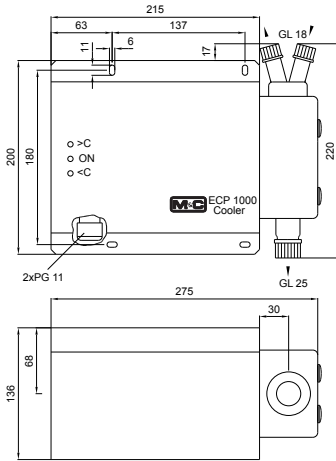
### M&C Application example for ECP

- 1 Heated filter sample probe SP210-H or SP2000-H
- 2 Heated sample line 4M4/6
- 3 Cooler ECP1000
- 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

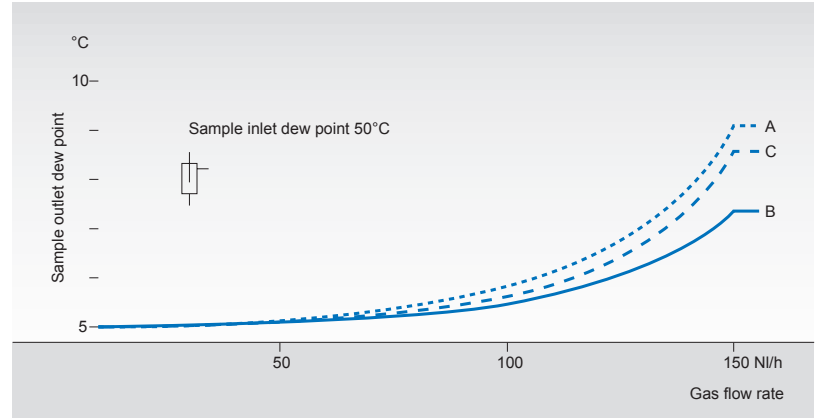


**M&C** Dimensions

**M&C** ECP 1000

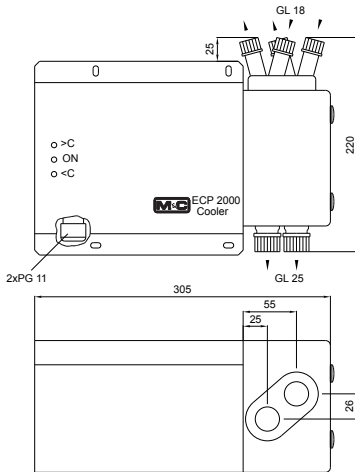


**M&C** ECP 1000

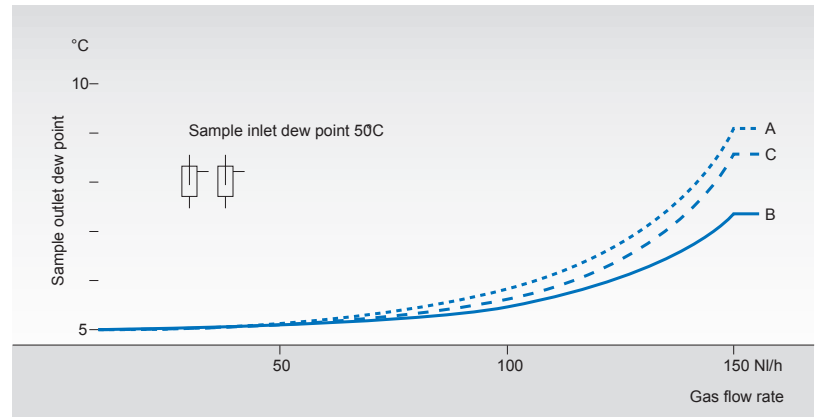


Gas cooler with	Part-No.
A Heat exchanger out of glass	01 K 1000
B Heat exchanger out of SS316Ti	01 K 2000
C Heat exchanger out of PVDF	01 K 3000

**M&C** ECP 2000

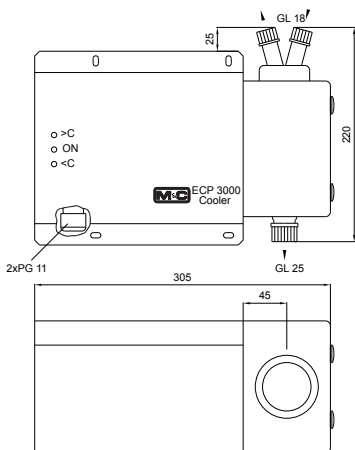


**M&C** ECP 2000

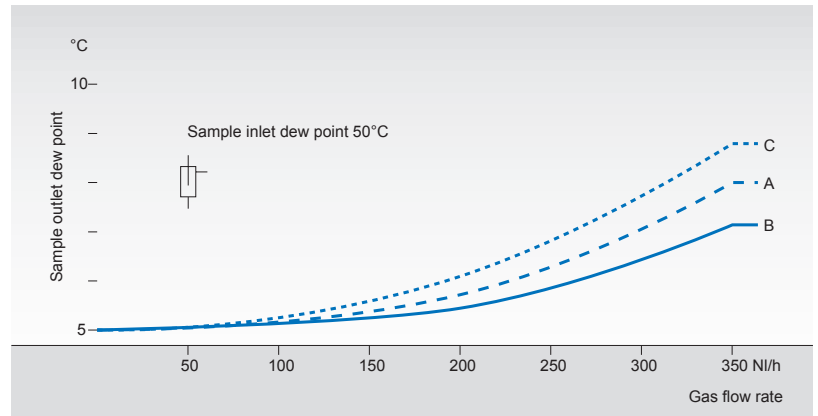


Gas cooler with	Part-No.
A Heat exchanger out of glass	01 K 2100
B Heat exchanger out of SS316Ti	01 K 2200
C Heat exchanger out of PVDF	01 K 2300

**M&C** ECP 3000



**M&C** ECP 3000



Gas cooler with	Part-No.
A Heat exchanger out of glass	01 K 3100
B Heat exchanger out of SS316Ti	01 K 3200
C Heat exchanger out of PVDF	01 K 3300

Dimensions in mm

Gas cooler serie EC <sup>®</sup>	ECP 1000	ECP 2000	ECP 3000
Number of heat exchanger	1	2	1
Gas flow rate per heat exchange	max. 150 NI/h**		max. 350 NI/h**
Ambient temperature	+5 to +45 °C, +50 °C*	+5 to +50 °C	+5 to +50 °C
Storage temperature	-20 to +60°C		
Sample outlet dew point	range of adjustment: +2 °C ..... +15 °C, factory setting: +5 °C		
Dew point stability	± 0,1 °C at constant conditions		
Sample inlet temperature	max. 180 °C**		
Sample inlet dew point	max. 80 °C**		
Total cooling power at +25 °C ambient	54 KJ/h W	97,2 KJ/h	97,2 KJ/h
Power consumption	100 VA	110 VA	110 VA
Main connection	230 V ± 10%, 50Hz or 115 V ± 10%, 60Hz		
Ready for working	< 10 min.		
Electrical connection	Terminals 2,5 mm <sup>2</sup> , cable gland 2 x PG 11.		
Status alarm: 2 changeover contacts	Contact rating: 250V, 2A, 500VA, 50W, Alarm point: Δ T ±3 °C zu T <sub>soil</sub>		
Case protection	IP 22; EN 60529		
Electrical standard	EN 61010		
Case colour	RAL 9005		
Method of mounting	wallmounting		
Dimension/Weight	5,5 kg	7 kg	7 kg
<b>Heat exchanger</b>			
Material of heat exchanger	Duranglass <sup>®</sup>	PVDF	stainless steel 316Ti
Admissible gas pressure	3 <sup>2)</sup> / 2 <sup>3)</sup>	3 / 2 <sup>3)</sup>	10 bar
Sample gas connection	for tube ø6 mm, 8 o. 10 mm*	G 1/4" i	G 1/4" i, NPT*
Condensate connection	for tube ø12 mm, 10 o. 8 mm*	G 3/8" i	G 3/8" i, NPT*
Δ P per heat exchanger at	1 mbar at 150 l/h	1 mbar at 150 l/h	5 mbar at 350 l/h
Stagnant space per heat exchanger	50 ml	50 ml	100 ml

\* Option

\*\* 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-adapter.
- 3) Max. 2 bar abs. with peristatic pump SR25.1.

GL adapter and tube fittings for the connection of different tube diameters at the heat exchanger see data sheet 3-5.1.1 and 7-1.1.