



ECM-2 G/SR25.2

Gas Cooler Series EC®



Compact Versions ECM-1 and ECM-EX2-1
for 1 x 250 NI/h

Compact Versions ECM-2 and ECM-EX2-2
for 2 x 150 NI/h

Special Features

- **Small dimensions and lightweight design**
- **ATEX and CSA certified version for hazardous zone 2 areas**
- **Gas flow 1 x 250 or 2 x 150 NI/h**
- **Jet-Stream heat exchangers in various materials**
- **Ambient temperature up to 50 °C [122 °F]**
- **Outlet dew point adjustable from +2 to +7 °C [35.6 to +44.6 °F]**
- **Dew point stability ± 0.1 °C [±0.18 °F]**
- **Digital temperature display**
- **Configurable status alarm contact**
- **Compact wall-mounting housing**
- **High reliability**

Application

The M&C gas cooler ECM is used in gas analysis to lower the dew point of humid gas to prevent condensation in the analyzer. An extremely stable and low gas dew point minimizes water vapour cross-sensitivity and volumetric errors.

The ATEX and CSA certified versions ECM-EX2-1 and ECM-EX2-2 can be used in Ex zone 2 and can also be equipped with up to 2 standard SR25.2 peristaltic pumps.

The compact and lightweight design ensures space-saving and easy installation in gas conditioning systems. The ECM gas coolers are self-monitoring and require only minimum maintenance.

Description

The ECM gas cooler is compact, self-controlling and requires only minimum maintenance. Detailed solutions ensure optimum cooling of the sample gas with minimal wash-out effects and guarantee reliable separation of the condensate.

The forced ventilation compressor cooling system with new control and the special design of the Jet-Stream heat exchangers ensure optimum dew point reduction to a low, stable value and reliable condensate separation. External condensate pre-separation is not required under normal conditions.

The condensate is optionally discharged by means of the integrated peristaltic pumps SR25.2 or externally by condensate traps AD or collecting vessels TG/TK. The practical design allows the installation of heat exchangers made of different materials depending on the application. The heat exchangers can be ordered optionally.

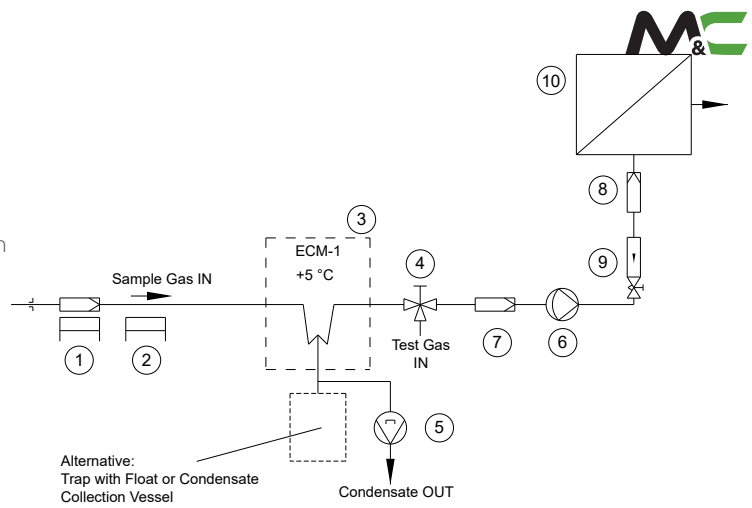
The digital display on the front panel shows the current cooler temperature. The cooler function can be monitored externally via an alarm contact. The alarm limits are set to < +2 °C and > +8 °C at the factory.

The 1-channel gas cooler ECM-1 can be equipped with a Jet-Stream heat exchanger for a flow rate of max. 250 NI/h.

The 2-channel gas cooler ECM-2 can be equipped with two Jet-Stream heat exchangers for a flow rate of max. 150 NI/h each.

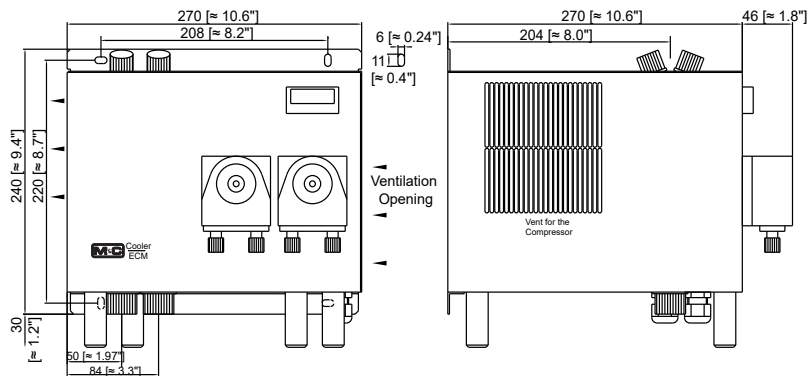
Application Example for ECM-1

- 1 Heated filter sample probe SP210-H or SP2000-H
- 2 Heated sample line 4M4/6
- 3 Cooler ECM-1G
- 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 optionally according to application
- 9 Flow meter FM10 or FM40, 25-250 NI/h
- 10 Analyzers, e.g. PMA1000



Dimensions

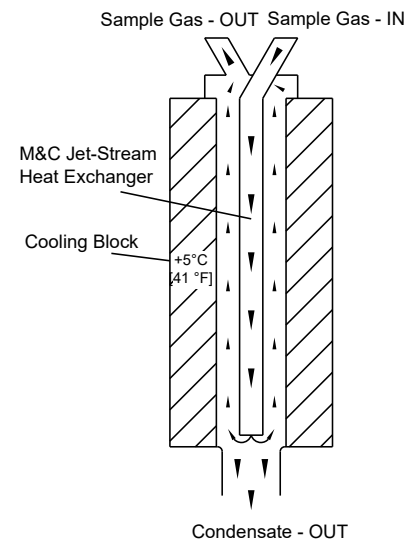
Compact Gas Cooler ECM-1/ECM-2/ECM-EX2-1/ECM-EX2-2



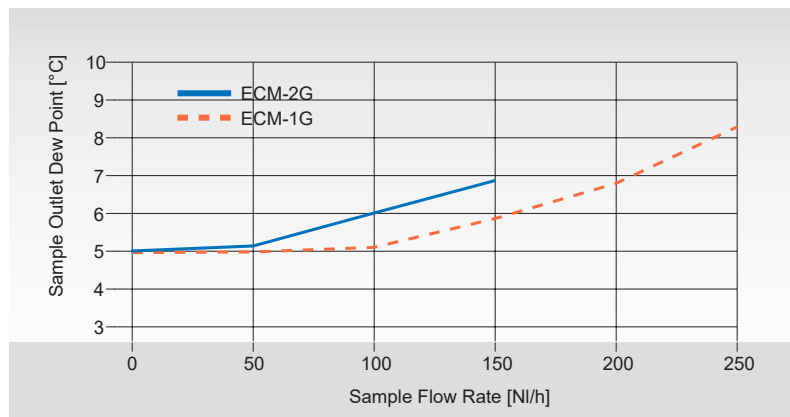
Dimensions in mm [Inches]

Drawing shows ECM-2G with two heat exchangers out of glass.
Heat exchanger(s) and peristaltic pump(s) to be ordered optionally!

Functioning Diagram of M&C Jet-Stream Heat Exchanger



Sample Gas Outlet Dew Point Stability



Sample gas outlet dew point stability at gas inlet dew point of 60 °C [140 °F].
Characteristics of heat exchanger out of PVDF or stainless steel upon request.

Technical Data

Gas Cooler Series EC*	Version ECM-1	Version ECM-2	Version ECM-EX2-1	Version ECM-EX2-2
Part No. for basic cooler without heat exchanger	02K7500X* (a)**	02K7510X* (a)**	02K7600X* (a)**	02K7610X* (a)**
Max. number of heat exchanger(s)-	1	2	1	2
Ambient temperature	+10 up to +50 °C [+50 to +122 °F]			
Storage temperature	-20 to +60 °C [-4 to +140 °F]			
Sample outlet dew point	Range of adjustment: +2 to +7 °C [+35.6 to +44.6 °F], factory setting: +5 °C [+41 °F]			
Dew point stability	At constant conditions < ±0.1 °C [±0.18 °F]			
Sample inlet temperature***	Max. 180 °C [356 °F]		***Max. +180 °C [356 °F] if cooler is mounted in Ex zone with temperature class T3 ***Max. +120 °C [248 °F] if cooler is mounted in Ex zone with temperature class T4	
Sample inlet dew point***	Max. 80 °C [176 °F]			
Total cooling capacity	144 kJ/h at +10 to +50 °C [+50 to +122 °F] ambient			
Ready for working	< 15 min.			
Main power connection/power consumption	230 V AC* or 115V AC**(a) -15 %/+10 %, 50/60 Hz, max. 200 VA Start up current: 230 V 50 Hz = 2.5 A / 115 V 60 Hz = 4.5 A			
Electrical connection	Terminals 2.5 mm ² , 2 x PG11 cable glands			
Status alarm 2 contacts, potential-free	Contact rating 250 V AC, 2 A, 500 VA, 50 W, alarm point < +2 °C [35.6 °F] and > +8 °C [46.4 °F]*			
ATEX/CSA certificate No..			230 V/115 V: II 3G Ex ec nC IIC T4 Gc (Zul.-Nr.: BVS 16 ATEX E 055 X) 230 V/115 V: Class I, Div. 2, Groups A/B/C/D, T4 / CAN/CSA-C22.2 No 61010.1-4; No. 213-M87.	
Electrical safety	EN 61010 CAN/CSA-C22.2 No.61010.1-04 UL Std. No. 61010-1(2nd Edition)			
System of protection	IP20 EN60529			
Method of mounting/case colour	Wall-mounting/RAL 9003			
Dimensions (W x H x D)	270 x 270 x 316 mm [≈ 10.6" x 10.6" x 12.4"]			
Weight	12 kg [≈ 26.5 lbs] (version 230 V)/13.5 kg [≈ 29.8 lbs] (version 115 V)			

Options

Options for basic cooler	ECM-1 and ECM-EX2-1			ECM-2 and ECM-EX2-2		
Heat exchanger type	ECM-1G	ECM-1PV	ECM-1SS	ECM-2G	ECM-2PV	ECM-2SS
Part No.	93K0140	93K0170	93K0160	97K0100	97K0110	97K0115
Material of heat exchanger	Duran® glass	PVDF	SS 316Ti	Duran® glass	PVDF	SS 316Ti
Max. gas flow rate per heat exch.	250 NI/h***	250 NI/h***	250 NI/h***	150 NI/h***	150 NI/h***	150 NI/h***
Gas press. max. bar abs. ³⁾	2/3 ²⁾	3	10*	2/3 ²⁾	3	10*
Sample gas connection	GL 18 for ø 6 mm o.d. tube*	G 1/4" i	G 1/4" i* or 1/4" NPT**	GL 18 for ø 6 mm o.d. tube*	Tube ø 6 mm*	Tube ø 6 mm
Condensate connection	GL 25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G 3/8" i	G 3/8" i or 3/8 NPT**	GL 25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G 3/8" i	G3/8" i or 3/8 NPT**
ΔP at max. flow rate	1 mbar	1 mbar	1 mbar	1 mbar	1 mbar	1 mbar
Stagnant space approximately	100 ml	100 ml	100 ml	40 ml	25 ml	30 ml
Peristaltic pump SR25.2	1 pc. integrated into the cooler, compl. installed, Part No.: 01P9125 cooler weight plus 0.6 kg [≈ 1.3 lbs] per pump					

* Standard, other version on request.

** Option

*** Maximum values in technical data must be rated in consideration of total cooling capacity at 25 °C [77 °F] ambient temperature and 5 °C [41 °F] outlet dew point.

²⁾ With GL connecting adapter.

³⁾ With SR25.2 max. 2 bar abs

Duran® glass is a brand name for borosilicate glass produced by the German company Duran Group GmbH.

Please note: NI/h and NI/min refer to the German standard DIN 1343 and are based on these standard conditions: 0 °C [32 °F], 1013 mbar.

Order example:

1 cooler ECM-2 with 2 heat exchangers out of glass ECM-2G and 2 peristaltic pumps SR25.2, power 115 V/60 Hz: Part. No. 1 x 02K7510xa; 2 x 97K0100; 2 x 01P9125

GL adapters and tube fittings for connecting different tube diameters at the heat exchanger see data sheets "Fittings for GL Glass Connections" and "Flexible and rigid tube fittings, plugs and connectors with barbed fitting".