



ECM-2 G/SR25.2

Gas Cooler Series EC®



Compact Version ECM-1 and ECM-EX2-1
for 1x 250 NI/h
Compact Version ECM-2 and ECM-EX2-2
for 2x 150 NI/h

Special Features

- Small dimension and light weight
- Explosion proof version according to ATEX, CSA and FM for zone 2
- Both versions with approval according to CSA_{US}
- Gas flow 1x 250 or 2x 150 NI/h
- Jet Stream heat exchangers in 3 standard materials
- Ambient temperature up to 50 °C (122 °F)
- Outlet dew point adjustable from +2 °C to +7 °C (+35.6 °F...+44.6 °F)
- Dew point stability ± 0.1 °C (±0.18 °F)
- Digital temperature indication
- Configurable status alarm contact
- Compact wall mounting housing
- Optimum reliability

Application

The M&C gas cooler ECM is used in gas analysis to lower the dew point of humid gas to avoid condensation in the analyser(s). An extremely stable and low gas dew point avoids water vapour cross-sensitivity and volumetric errors.

The explosion-proof versions ECM-EX2-1 and ECM-EX2-2 can be used in Ex-zone 2 and, they too, may additionally be equipped with up to 2 standard peristaltic pumps SR25.2.

The compact and light weight construction allows a simple and space-saving installation. The ECM gas coolers are self controlling and maintenance free in operation.

Description

Compact, maintenance-free and self-controlling. Intelligent detailed solutions provide optimum cooling of the sample gas and direct separation of condensate to avoid contamination effects.

The new controlled compressor cooling system and the special design of the jet stream heat exchanger guarantee an optimum dew point reduction to a low, stable value. An additional pre-drainage device is not necessary in normal applications.

The condensate should be removed with integrated small peristaltic pumps SR25.2 or optionally by external condensate traps AD... respectively collection vessels TG../TK..

The simple construction enables heat exchangers of different materials to be used depending on the application. Heat exchangers to be ordered optionally.

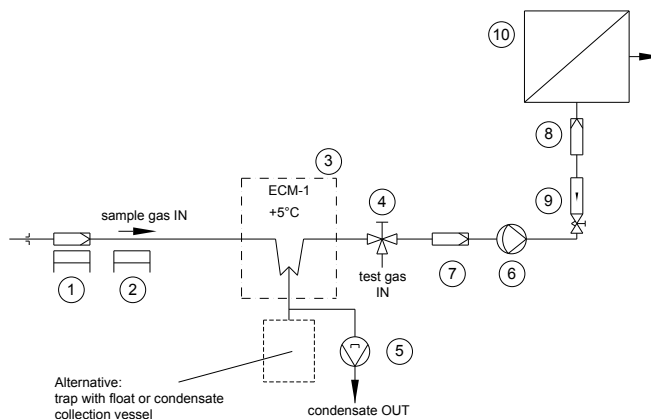
The digital indicator in the front panel displays the cooling temperature. The function of the cooler can be externally controlled via the alarm contact, configured at <+2 °C (<+35.6 °F) and >+8 °C (>46.4 °F) as a standard.

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

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

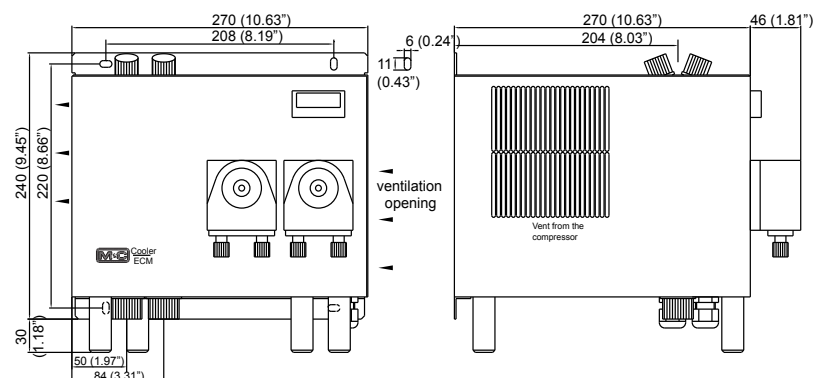
Application example for ECM-1

- 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 optional according to application
- 9 Flow meter FM10 or FM40, 25-250 NI/hr
- 10 Analysers f. e. PMA1000



Dimensions

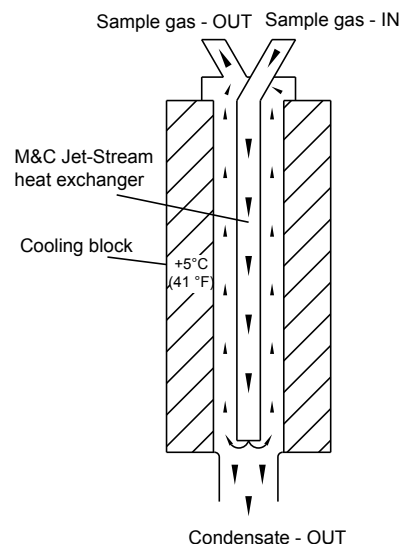
Compact gas cooler ECM-1 / ECM-2 / ECM-EX2-1 / ECM-EX2-2



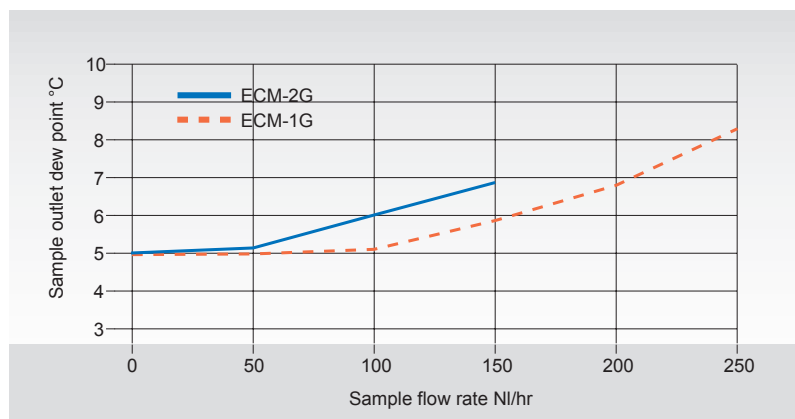
Dimensions in mm

Drawing shows ECM-2G with two heat exchanger 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.
Characteristics of heat exchanger out of PVDF or stainless steel on request.

Technical Data

Gas cooler series EC*	version ECM-1	version ECM-2	version ECM-EX2-1	version ECM-EX2-2
Part No. for basis cooler without heat exchanger	02 K 7500X* (a)**	02 K 7510X* (a)**	02 K 7600X* (a)**	02 K 7610X* (a)**
Number of heat exchanger possibility-	1	2	1	2
Ambient temperature	+10 up to +50 °C (+50 °F to +122 °F)			
Storage temperature	-20 to +60 °C (~-4 °F to + +140 °F)			
Sample outlet dew point	range of adjustment: +2 °C +7 °C (+35.6 °F...+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 T3	
Sample inlet dew point***	max. 80 °C (176 °F)			
Total cooling capacity	144 KJ/h at +10 up +50 °C 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 2.5mm ² , 2 x PG11 cable gland (with FM-approval conduit-hub 1/2" NPT)			
Status alarm-2 contacts, potential free	contact rating 250 VAC, 2 A, 500 VA, 50 W, alarm point < +2 °C (35.6 °F) and > +8 °C (46.4 °F)*			
Explosion proof protection			230 V / 115 V : IIC T4 Gc II 3 G Ex nA nC IIC T4 (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 115 V : Class I, Div. 2, Groups A/B/C/D, T4 / FM Approval Standard Class No. 3611.	
Electrical safety	EN 61010 CAN/CSA-C22.2 No.61010.1-04 UL Std. No. 61010-1(2 Edition)			
System of protection	IP20 EN60529			
Method of mounting / Case colour	wall mounting / RAL 9003			
Dimension	270 x 270 x 316 mm (10.63" x 10.63" x 12.44") W x H x D			
Weight	12 kg (26.46 lbs) / 13.5 kg (29.76 lbs) (Version 230 V / 115 V)			

Options

Options for basis 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.	93 K 0140	93 K 0170	93 K 0160	97 K 0100	97 K 0110	97 K 0115
Material of heat exchanger	Duran glass	PVDF	st. steel 316Ti	Duran glass	PVDF	st. steel 316Ti
Max. gas flow rate per h.e.	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	GL18 for ø 6 mm o.d. tube*	G1/4"i	G1/4"* or 1/4"NPT**	GL18 for ø 6 mm o.d. tube*	Tube ø 6 mm*	Tube ø 6 mm
Condensate connection	GL25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G3/8"i	G3/8"i or 3/8 NPT**	GL25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G3/8"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. incorporated in the cooler, compl. installed, Part No.: 01 P 9125 cooler weight plus 0.6 kg (1.32 lb) per pump					

* Standard, other version on request.

** Option

*** Maximum values in technical data's 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.

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 02 K 7510xa; 2 x 97 K 0100; 2 x 01 P 9125

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.