



EC-30/FD

Ultra Low Gas Cooler Series EC®

Version EC-30 dew-point -30 °C,
250 NI/hr sample flow rate

Special Features

- **Jet-Stream heat exchangers**
- **Dew Point -30 °C**
- **250 NI/hr sample gas flow rate**
- **Continuous operation**
- **Low maintenance**
- **Self-monitoring incl. status alarm**
- **Optimum reliability**
- **19" Rack- or wall mounting housing**

Application

The patented M&C Ultra-Low Cooler EC-30 finds its applications in the analytical field for reducing the dew point of humid sample gases, providing a stable and very low dew point and reducing aerosol formation in the analyser. By mounting the cooler EC-30 near to the sample point, costly energy consuming heated sample lines can be avoided. An extremely stable and low gas dew point avoids water vapour cross-sensitivity and volumetric errors.

In order to guarantee the necessary and minimum operation of the gas cooler EC-30, we provide this unit with an accessory module EC-F containing two fans for forced air ventilation and cooling of the compressor unit. Alternative we deliver an the cooler with the module EC-FD containing additionally three peristaltic pumps SR-25.1 for automatic removal of condensate.

Description

The patented M&C gas cooler EC-30 is a two stage combination of compressor and Peltier cooler with status alarm and automatic defrosting of the dual deep freezer unit for 100% sample availability.

The pre-cooler "3" of the gas cooler EC- is fitted with a "Jet-Stream" heat exchanger EC-G which is cooled by a compressor cooling unit with electronic control at a constant temperature of +2 °C. Optimum cooling of sample gases and pre-elimination of a larger part of the condensate from the gas is reliably achieved.

No external pre-draining is normally needed. The deep freezer "1" and "2" is cooled with two modified "Jet-Stream" heat exchangers EC-30 fitted between two automatic cooling units for a minimum temperature of -30 °C.

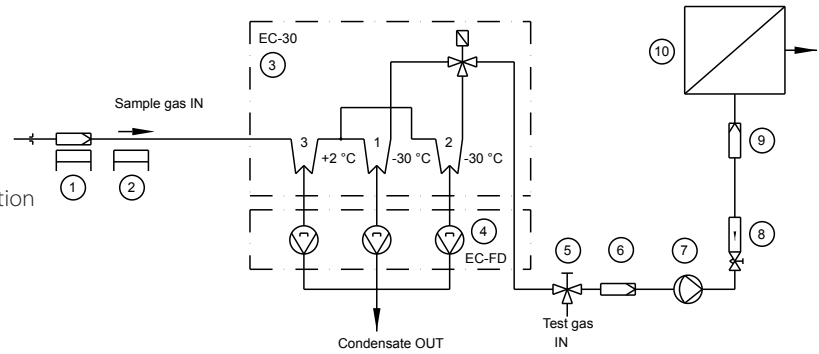
The special design of the Jet-Stream heat exchanger guarantees optimum dew point reduction to a low, stable value and secures condensate separation.

The gas outlets of the heat exchangers are connected to a 3/2 way solenoid valve. An electronic control system EC-30 switches the solenoid valve for simultaneous change-over and automatic defrosting of the heat exchangers EC-30.

Example application for EC-30/FD

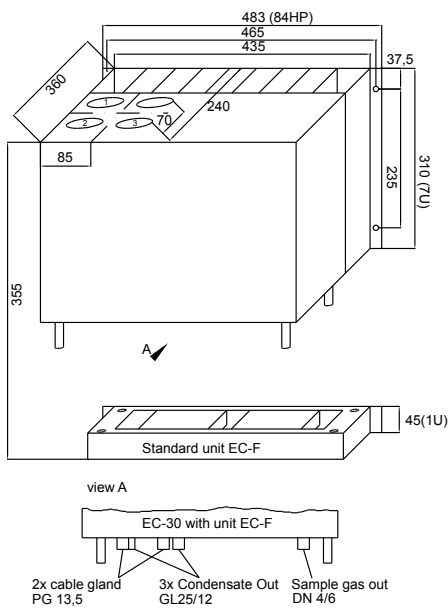


- 1 Heated filter sample probe SP2000-H
- 2 Heated sample line 4M4/6
- 3 Ultra low cooler EC-30
- 4 Universal unit EC-FD with 3 peristaltic pumps SR25.1
- 5 3-way ball valves 3L/PV-1
- 6 Fine filter FP-2T-D with liquid alarm LA1
- 7 Diaphragm pump MP47
- 8 Flow meter FM10, 25-250NI/hr
- 9 Aerosol filter CLF-5/W optional according to application
- 10 Analyser, f.e. PMA100

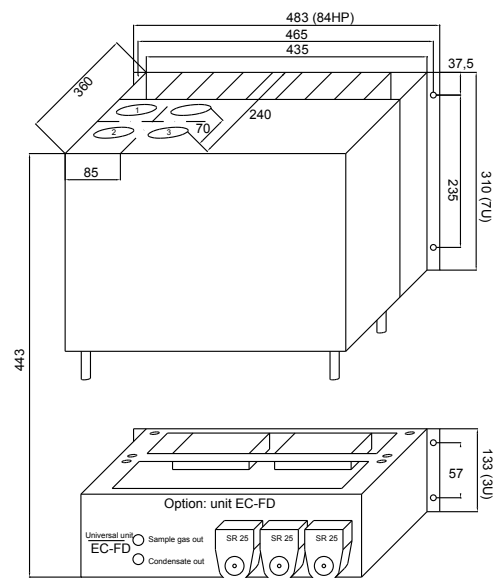


Dimensions

EC-30 basic version with unit EC-F

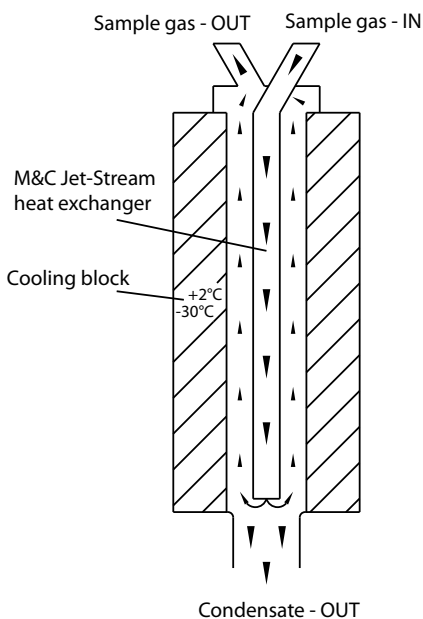


EC-30 basic version with unit EC-FD



Dimensions in mm

Functioning diagram of M&C heat-exchanger



Technical Data

Cooler Series EC*	Version EC-30	Version EC-30/FD
Part No.:	02K6000 (a)**	02K6010 (a)**
With integrated universal unit:	EC-F for forced ventilation	EC-FD ventilation and condensate drainage
Gas connection	Tube connector DN 4/6 ID/OD mm	
Condensate connections	3x tube connector GL 25-12 mm	1 x tube connector DN 4/6 i./o. d. mm
Material of sample contacting parts	Duran® glass, PTFE, PVDF	
Single stream, gas flow rate	90 NI/h to 250 NI/h*	
Gas pressure	Max. 3 bar abs.	
Ambient temperature	+5 to +45 °C [41 to 113 °F]	
Storage temperature	-20 to +60 °C	
Sample outlet dew point	-30 °C	
Sample inlet temperature	Max. 180 °C*	
Sample inlet dew point	Max. 80 °C*	
Cooling capacity at 25 °C ambient	Max. 860 kJ/h*	
Main power connection / Power consumption	230 V/50Hz, 380 VA or **Part No. ...-a = 115 V/60Hz, 380 VA	
Start-up time	< 60 min.	
Stagnant space	Approx. 160 ml	
ΔP at 250 NI/h flow rate	5 mbar	
Electrical connection	2.5 mm² terminals, 2x PG13,5 cable glands	
Status alarm 2 changeover contacts, potential free	Contact rating 250 V, 3 A, 500 VA, 50 W	
Case protection/electrical equipment standard	IP20 EN 60529/EN 61010	
Method of mounting/case color	19" rack or wall-mount/case color RAL 9003	
Dimension	84 HP x 8 U x 360 mm [≈ 14.2"]	84 HP x 10 U x 360 mm [≈ 14.2"]
Weight	37 kg [≈ 81.6 lbs]	42 kg [≈ 92.6 lbs.]

* Maximum values in technical data must be rated in consideration of total cooling capacity at 25 °C ambient temperature.

Option

Aerosol-Filter CLF-5

External mounting in the outlet of an ultralow gas cooler EC-30 when sample tends to form aerosols, Part Number 03F3000.
For technical data see data sheet "Fluid Particle Filter Series CLF®".