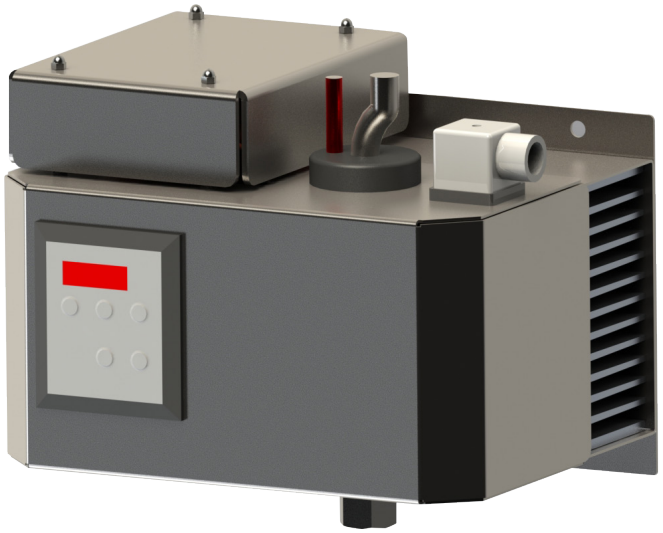
Peltier Cooler
PC2



PC2

FEATURES

- Compact design for installation into a gas cooling system
- Cost-effective
- Easy for installation
- Low operating noise
- No Compressor
- Model for high ambient temperature

ADVANTAGES

- Adjustable outlet dew point
- Nominal capacity 90 kJ/h
- Dew point stability 0.1 °C
- MCD400 display module for separate installation
- High dew point stability
- Environmentally friendly and safe
- Ensure high condensate removal

DESCRIPTION

PC2

In the chemical industry, petrochemistry, or biochemistry, reliable process control relies on prompt and exact determination of the operating parameters.

Here, gas analysis is key for safe and efficient control of process flows, environmental protection, and quality assurance. This benefits controlling flue gas emissions in power stations or exhaust gas analysis in automotive engineering, as well as the efficient control of air separators or sterile production and packaging in the food industry.

Many of the analysis processes used in these fields require extracting the sample gas. This inevitably also extracts process-related contamination such as particles or moisture. These in turn can impact the measurement results or damage the measuring cells. The sample gas must therefore be conditioned before entering the analyzer.

Peltier Cooler - PC2 offers a variety of options for installation in gas analysis systems.

PC1

The reliable and long-term operation of an analyzer system depends upon the efficiency of the sample conditioning system for which a stable dew point of a sample is essential.

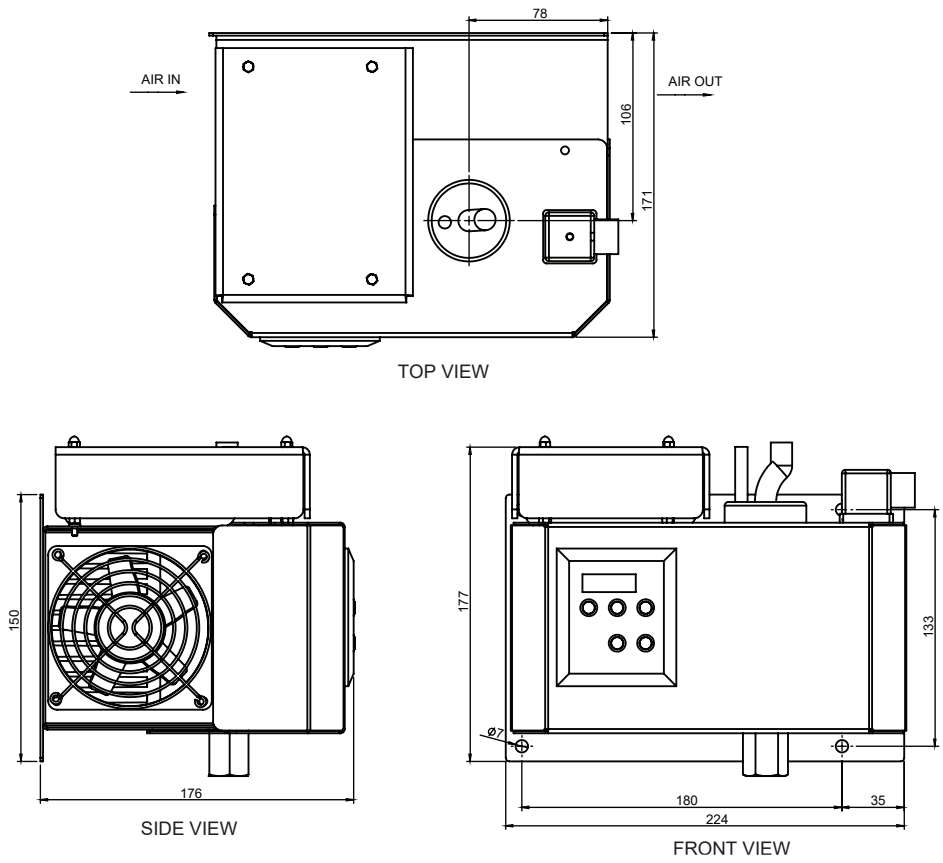
Axis Peltier Cooler - PC1 is one of the options to maintain a stable dew point by removing condensation from the sample.

It is mainly used where refrigeration-based (compressor-based) resources are a challenge. It is a fully mechanical device hence very less maintenance is required. it is used in Gas Analysis Systems.

It works on Peltier Effect; Peltier blocks are used with an electronic circuit. PC1 can work in the most adverse environmental conditions. They are suited for working in high ambient temperatures. There are no refrigerants and thus no danger of leakage. Cooling performance is ensured by having very precise control of temperature directly (due to the Peltier element).

The heat exchanger is either a single path or dual path so that two different streams can be catered to. A very compact design ensures the best placement of other components with an indirect saving of cost.

DIMENSION DETAILS



All Dimension are in MM

TECHNICAL SPECIFCATIONS FOR PC2

Ready for operation	after max. 10 minutes		
Dimensions	Refer above dimensional detail		
Ambient temperature	5°C to 50°C		
Gas output dew temperature preset: adjustable:	5°C 2°C...20°C		
Rack material	Stainless steel		
Electrical power input	24 V DC	230 V AC	115 V AC
	5 A	0.6 A	1.2 A
	120 W	110 W / 140 VA	
Status output switching capacity	max. 230 V AC, 150 V DC 2 A, 50 VA, potential-free		
Electrical connections	Cable clamp (with transformer, 24 V DC) or blade receptacle (with switching power supply)		
Gas connections	For Heat exchanger see table “Heat exchanger overview”		
Parts in contact with media Heat exchanger	see table “Heat Exchanger Overview”		

Important Note: Due to continuous product improvement; specifications may be subject to change without notice.

OUTPUT

PC2 - One Heat Exchanger		PC2 - Two Heat Exchangers	
Rated cooling capacity (at 25°C)	90 kJ/h	Rated cooling capacity (at 25°C)	90 kJ/h
Max. Ambient temperature	50 °C	Max. Ambient temperature	50 °C
Dew point fluctuations static	± 0.1 K	Dew point fluctuations static	± 0.1 K
in the entire specification range	± 1.5 K	in the entire specification range	± 1.5 K
		Temperature difference between heat exchangers	< 0.5 K

HEAT EXCHANGER OVERVIEW

Heat Exchanger	**PTS** **PTS-I** [2]	**PTG** **PTG**	**PTV** **PTV-I** [2]	**MTS** [3] **MTS-I** [2] [3]	**MTG** [3] **MTG** [3]	**MTV** [3] **MTV-I** [2] [3]
Version / Material	Stainless steel	Glass	PVDF	Stainless steel	Glass	PVDF
Flow rate v_{max} [1]	450 Nl/h	250 Nl/h	250 Nl/h	300 Nl/h	210 Nl/h	190 Nl/h
Inlet dew point $\tau_{e,max}$ [1]	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C
Gas inlet temperature $_{G,max}$ [1]	180 °C	140 °C	140 °C	140 °C	140 °C	140 °C
Max. Cooling capacity Q_{max}	150 kJ/h	90 kJ/h	90 kJ/h	95 kJ/h	80 kJ/h	65 kJ/h
Gas pressure p_{max}	160 bar	3 bar	2 bar	25 bar	3 bar	2 bar
Pressure drop Δp (v=150 L/h)	10 mbar	10 mbar	10 mbar	20 mbar	19 mbar	18 mbar
Dead volume V_{tot}	29 ml	29 ml	57 ml	19 ml	18 ml	17 ml
Gas connections (metric)	Swagelock 6 mm	GL 14 (6 mm) [4]	DN 4/6	6 mm tube	GL14 (6 mm)	DN 4/6
Gas connections (US)	1/4”	GL 14 (1/4”) [4]	1/4”-1/6”	1/4” tube	GL14 (1/4”)	1/4”-1/6”
Condensate out connections (metric)	G3/8	GL 25 (12 mm) [4]	G3/8	G1/4	GL18 (8 mm)	G1/4
Condensate out connections (US)	NPT 3/8”	GL 25 (1/2”) [4]	NPT 3/8”	NPT 1/4”	GL18 (8 mm)	NPT 1/4”

1) Max. cooling capacity of the cooler must be considered

2) Models marked I have NPT threads or US tubes, respectively.

3) Passive discharge via automatic condensate drains or traps not applicable for MTG heat exchangers. For passive discharge on he MTS and MTV heat exchangers, use a screw connection with a clearance of at least 7 mm (see accessories).

4) Gasket inside diameter

ORDERING INFORMATION FOR PC2

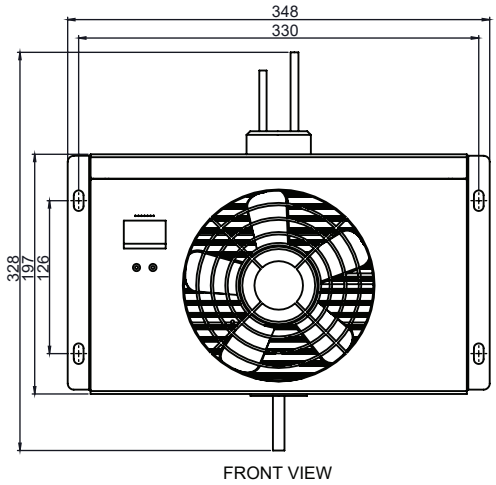
PC2	2	9	X	2	0	X	X	0	**Product Characteristic**
			1						Peltier Cooler with 1 heat exchanger
			2						Peltier Cooler with 2 heat exchanger
									Peltier cooler type
				2	0				PC2 : Ambient temperature 50 °C
									Supply voltage
						1			115 V AC, 50/60 Hz (transformer)
						2			230 V AC, 50/60 Hz (transformer)
						4			24 V DC
						5			115 V AC, 50/60 Hz (switching power supply)
						6			230 V AC, 50/60 Hz (switching power supply)

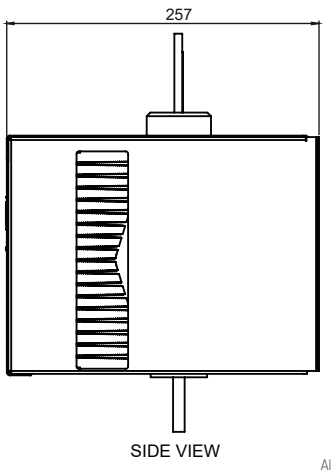
PC1

TECHNICAL SPECIFCATIONS FOR PC1

General	Type	Peltier	
	Mounting	Wall / Base Mounting	
	Dimensions	Refer dimensional detail	
	No. of Sample Coils	One / Two	
	Sample	Gas	
	Weight	Approx. 12 Kg	
Material	Housing	Mild Steel (Painted) / others on request	
	Heat Exchanger	SS 316	
Connections	Sample Gas Inlet	1/4" Tube	
	Sample Gas Outlet	1/4" Tube	
	Condensate Outlet	3/8" Tube	
Electrical	Power Supply	230 VAC, 50 Hz	
	Alarm Contact	Optional	
	Current	Approx. 5.4 A	
Functionality	Sample Gas Flow	300 LPH	
	Sample Out Temp.	Approx. 5°C (+/- 0.1°C)	
	Operating Pressure	1.5 bar (Heat Exchanger)	
	Cooling Capacity	270 kJ	
	Warm Up Time	20 min. Max.	
	Ambient Temperature	+5°C to +50°C	
Heat Exchanger		**SCE**	**DCE**
	Flow Rate	300 LPH	2 x 150 LPH
	Max. Cooling Capacity	420 kJ/h	420 kJ/h
	Deal Volume	67ml	30ml
	Pressure drop	< 0.1 bar	< 0.1 bar

DIMENSION DETAILS





All Dimension are in MM

ORDERING INFORMATION FOR PC1

PC1	2	9	X	2	0	X	X	0	**Product Characteristic**
			1						Peltier Cooler with 1 heat exchanger
			2						Peltier Cooler with 2 heat exchanger
									Peltier cooler type
				2	0				PC1 : Ambient temperature 50 °C
									Supply voltage
						1			115 V AC, 50/60 Hz (transformer)
						2			230 V AC, 50/60 Hz (transformer)

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