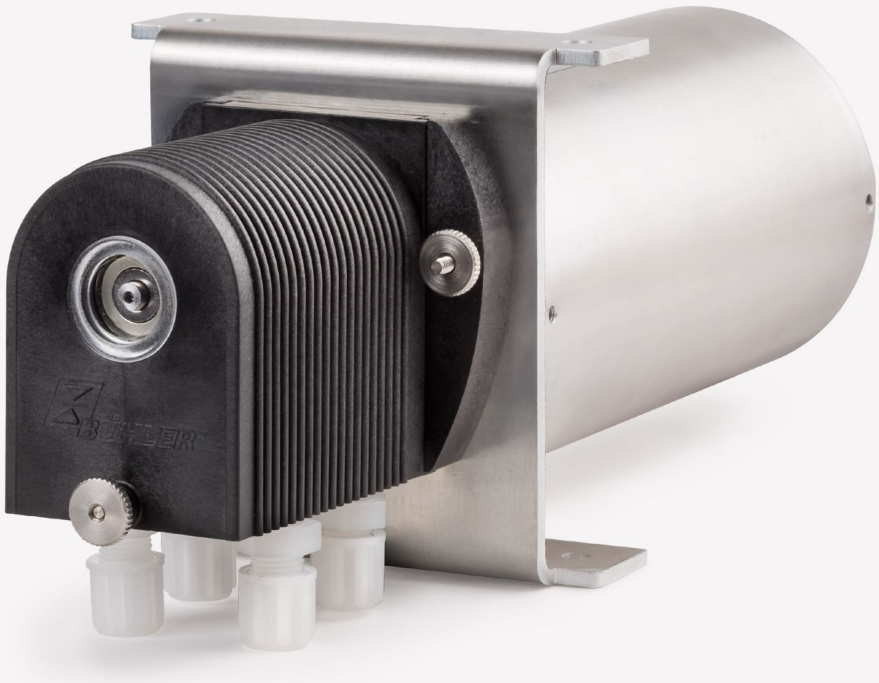
Gas Analysis



Peristaltic condensate pumps CPsingle X1, CPdouble X1

Condensate accumulates when conditioning gas in gas conditioning. It always accumulates when cooling moist sample gas. On one hand this may occur inadvertently if thermal bridges occur in the sample gas lines. On the other hand the deposit of moisture is necessary to protect the measuring cells in the analyser from damage and/ or stabilise measurements.

Since the sample gas is often conveyed through the analysis system with suction, the condensate must be pumped off to remove it.

So-called peristaltic pumps are particularly suited for this purpose. They systemically protect the sample gas system from external air and based on the hose material used offer high resistance against the often times highly corrosive condensate.

Many applications require equipment which can be used in explosive areas. This is where the CPsingle X1 and CPdouble X1 with flame-proof synchronous geared motors solutions for zone 1.

The CPsingle X1 and CPdouble X1 pump series were developed specifically for these severe operating conditions.

Suitable for use in Zone 1 according to ATEX and IECEx
Housing version
Pumps available with single or double head
Separate installation possible
Easy to replace hoses
115/230 V AC
Reliable

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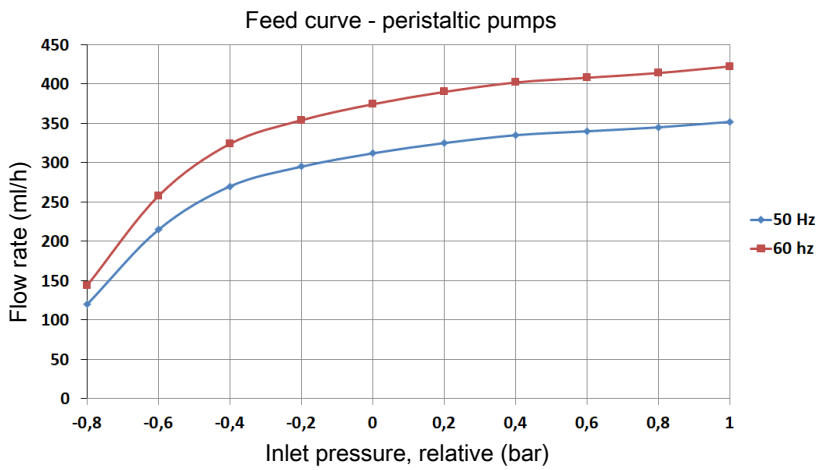
Technical data

Technical Data CPsingle/CPdouble Peristaltic Pumps	
Nominal voltage / power input: at T_{amb} = 20 °C and under load	230 V 50/60 Hz, 0.026 A (50/60 Hz) 115 V 50/60 Hz, 0.052 A (50/60 Hz) ±5 % voltage, ±2 % frequency
Flow rate:	0.3 L/h (50 Hz)/0.36 L/h (60 Hz) with standard hose
Inlet vacuum:	max. 0.8 bar
Inlet pressure:	max. 1 bar
Output pressure:	1 bar
Degree of protection:	IP 40
Ambient temperature:	0...60 °C
Cord length:	3 m
Materials Hose: Connections:	 Norprene (standard) PVDF
Motor markings:	ATEX: Ex II 2G Ex db IIB T4 Gb IECEx: Ex db IIB T4 Gb
Pump marking:	Ex II 2G c IIB T4 X

The motor may be operated without protective circuit and depending on the housing length is designed for maximum heating in the event of a fault.

The expected life of the motor is over 30,000 operating hours.

Flow rate



When operating the pumps with 60 Hz, the values increase by 20 %.

Calculating condensate accumulation

Dew point	30	40	50	60	70	80	°C
Moisture content Vol %	4	7	12	20	31	47	Vol %
Moisture accumulation (w) per 100 Nl/h/cooled air	2.2	4	6.5	12	22	44	$\frac{ml}{h}$ per 100 Nl

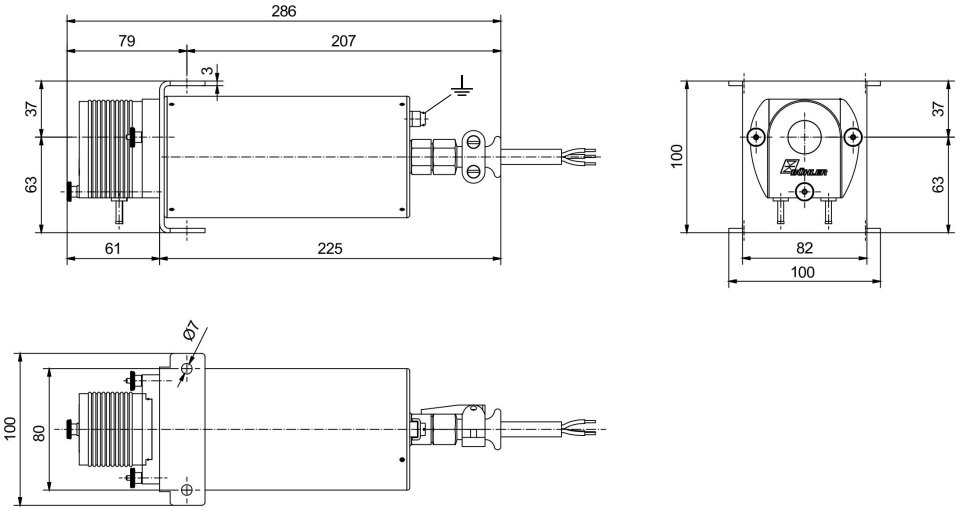
Total condensate accumulation formula:

$$w_{tl} = \frac{\text{Cooled air flow}}{100\ \text{Nl/h}} \cdot w\ (\text{inlet dew point})$$

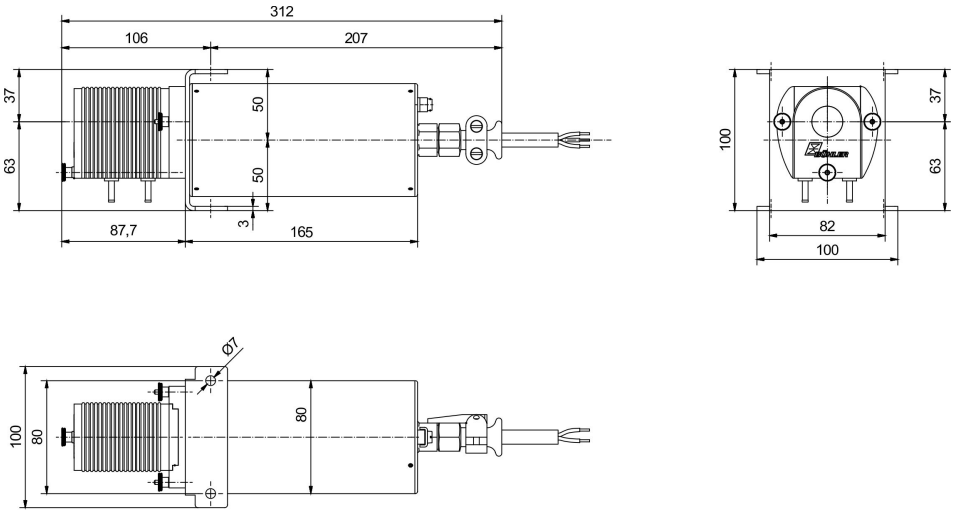
Example: 180 Nl/h behind the cooler; Inlet dew point 50 °C

$$w_{tl} = \frac{180\ \text{Nl/h}}{100\ \text{Nl/h}} \cdot 6.5\ \frac{ml}{h} = 12\ \frac{ml}{h}$$

Dimensions of peristaltic pumps 115 / 230 V
Version with 1 gas path



Version with 2 gas paths



Peristaltic pump ordering information

The item number is a code for the configuration of your unit. Please use the following model key:

4492	X	1	X	3	1	0	X	Product Characteristic
								Gas path
	1							Single gas path
	2							Double gas path
								Version
		1						Housing version
								Supply voltage
			1					115 V AC
			3					230 V AC
								Area of application
				3				for explosive areas zone 1
								Hose material
					1			Norprene
								Flow rate / hour
						0		0.3 L/h
								Hose connection
							1	straight hose nipple
							4	Screw connection (metric) DN 4/6
							5	Screw connection (US) 1/6" - 1/4"