

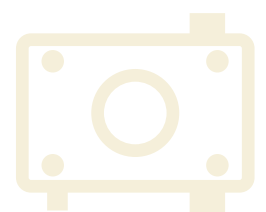


## WADose LITE/PLUS HP HPLC pumps



**An intelligent, accurate dosing pump for technical centres, laboratories, test benches and production**

- Dosing range 0.019  $\mu\text{l}/\text{min}$  ... 40 ml/min up to 400 bar
- Plug & work with mini CORI-FLOW® flowmeter
- Easy operation and integration in control systems
- Pump head made of stainless steel or PEEK
- Integrated pressure monitoring and control system
- Low-pulsation dosing
- Tempering or cooling for liquefied gases
- External analogue signals (0...10 VDC/4...20 mA)



## WADose HPLC pump

The “PLUS” and “LITE” models of the WADose series are intelligent, accurate dosing pumps for dosing tasks with fluids in technical centres and laboratories, for test benches and production.

The WADose PLUS is characterised by comprehensive ease of use with a touch display, trend display and integrated calibration function.

The WADose LITE is operated via a user-friendly keypad with a clearly legible display.

Both models can be integrated very easily into control systems.

The low-pulsation dual-piston pump is controlled by an intelligent control system with a step motor that is accurate for very small step and dosage rates. The pressure ranges from atmospheric to 400 bar.

With the intelligent, optional mass flow interface for a mini CORI-FLOW® mass flowmeter, the actual flow rate is controlled. A built-in pressure sensor can be used for direct pressure control (“PLUS”) and for pressure monitoring.

### Does my pump really pump what it should pump?

This uncertainty always exists if there is no option to monitor the pump directly or using time-dependent gravimetric measurements. Wear and tear or defects in pumps, unexpectedly high counterpressures, compressibility factors, lack of dosing fluid, leaks, air pockets, blockages – all of these may lead to a situation in which the desired amount of fluid is not transported.

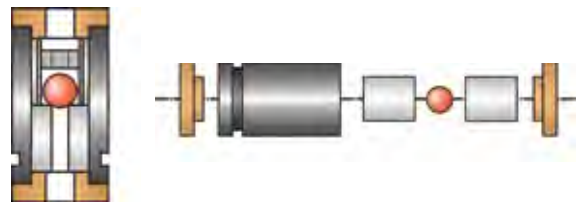
A special feature is that the quantity pumped can be monitored and accurately measured using a newly developed CORIOLIS mass flowmeter.

The dosing system is located within a continuously self-monitoring control circuit.

*This makes it absolutely certain that the pump also actually does what it should!*

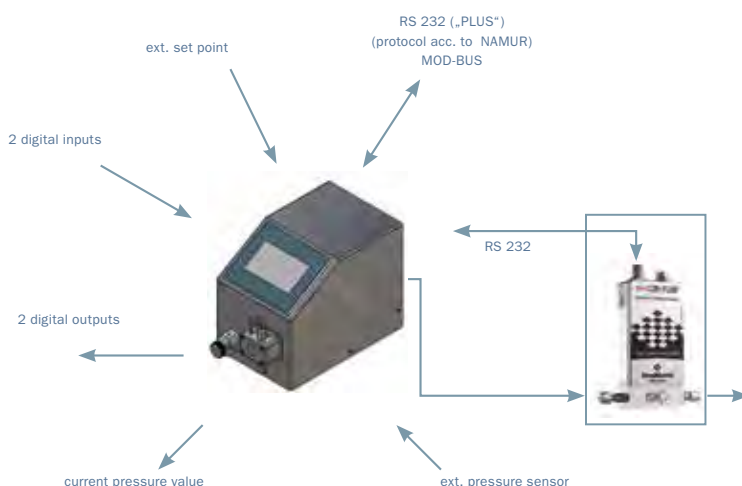
### Pump operating principle

The WADose pump head is based on a dual-piston transport system. It works on the principle of the oversquare piston technique with only two non-return valves made of sapphire. The transport piston uses a stroke length of 2 mm and the damping piston uses 1 mm. This results in a transport volume of approx. 20 µl for each piston stroke with the analytical and preparative pump head. With the micro-head, the volume is significantly reduced.



This low transport volume for each piston stroke combined with a relatively high stroke frequency results in limited residual pulsation. Both pump pistons are positioned in opposite directions. While the transport piston displaces the fluid in the pump head, the damping piston located in the pressure range absorbs half of the transport volume. To bridge the suction phase of the transport piston, the damping piston ejects the volume absorbed.

The speed control system using a step motor ensures that the transport is constant, even with varying counterpressures.



Mass-flow measurement using integrated pump control system



Rear of WADose PLUS

## Specifications

**Dosage amounts:** Micro 0.001...2 ml/min  
Analytical: 0.005...10 ml/min  
Preparative: 0.02...40 ml/min  
PEEK model: max. 30 ml/min  
(based on H<sub>2</sub>O at 1 barg)

**Pressure range:** atm...400 barg (40 ml/min to 160 bar)

**Pressure sensor:** 0...400 barg → 0.5% of final value

**Temperature range:** standard 40°C, TU model -20 °C...+130 °C

**Viscosity:** up to 40 mPa.s

**External set point:** 0...10 VDC (others on request) for rpm, flow rate or pressure

**External actual value:** 0...10 VDC for flow rate or pressure

**Massflow interface:** digital RS 232 for mini CORI-FLOW®, LIQUI-FLOW® from Bronkhorst High-Tech B.V.

**Graphs with mini CORI-FLOW®:** volumetric flow rate, pressure, trend, mass flow rate, density, temperature, batch quantity

**Controls:** TFT 480 x 270 pixels / touch display ("PLUS"), keypad ("LITE")

**Mechanical connections:** input 1/8" clamp ring, output 1/16" clamp ring (1/8" clamp ring possible with supplied adapter)

**Weight:** 5 kg ("PLUS"), 4.5 kg ("LITE")

**Operating modes:**  
– volume transport (accuracy < 3% in range 1:10 for water)  
– mass dosing  
– controlled pressure

**Relief valve:** integrated – manually controlled at the front in contact with media: stainless steel or PEEK

**Materials:** ceramic

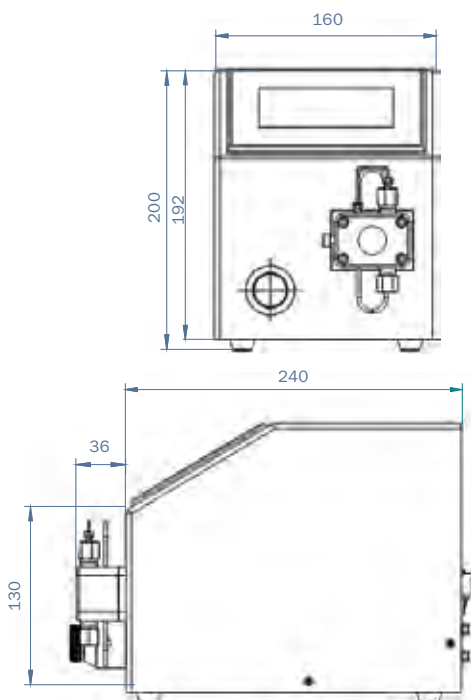
**Pressure sensor:** stainless steel, brushed

**Housing:** via external mains adapter (included)  
90...264 VAC /120 W

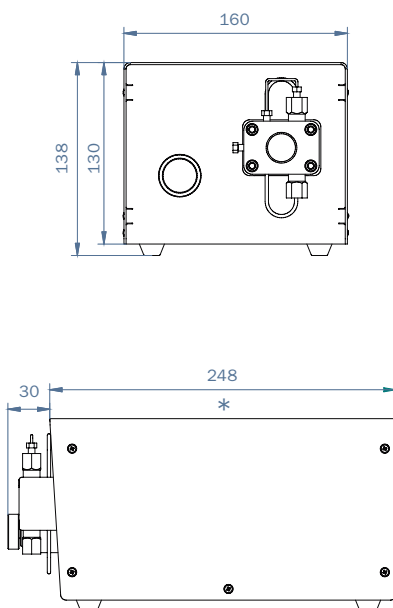
**Power supply:** 2 x digital In 24 VDC  
2 x digital Out 24 VDC  
MOD-BUS RTU, RS 232, USB ("LITE"), I<sup>2</sup>C ("LITE")  
analogue In 0 – 10 V or 4 – 20 mA  
analogue Out 0 – 10 V or 4 – 20 mA

## Dimensions (mm)

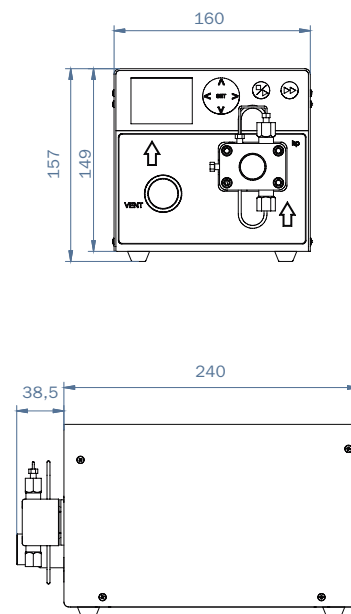
WADose PLUS HP C



WADose PLUS HP T



WADose LITE HP



The indicated dimensions are approximate dimensions and may be changed without prior notice. \* The housing dimensions for the pumps and the display unit are identical.

## User interfaces

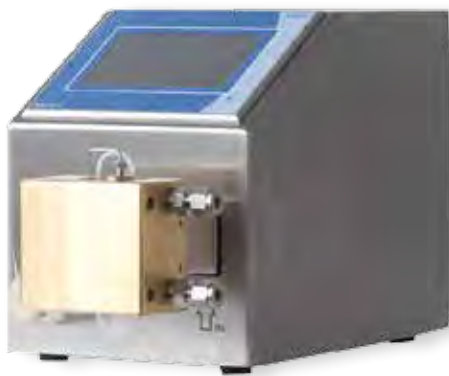
Example views of user interfaces for the WADose PLUS



Flow control system with pressure, density and temperature graph



Trend and PID



WADose with optional tempering head and thermal distance unit for low and high temperatures (-20 ... +130°C)



Rear of WADose LITE housing



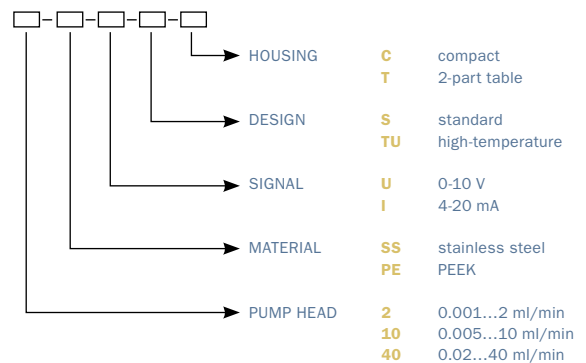
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## Options and accessories

- Pressure sensor modified for special measuring range
- External analogue density output or temperature
- Mini CORI-FLOW® mass flowmeter, type M12, M13, M14
- WD90001 de-airing injection and cannula, tube and fitting 1/16"
- WD90007 pulsation damper, stainless steel, 100 bar
- WD90010 tempering head, max. +130°C/min. -20°C
- WD10001 pump head (incl. valves), 2 ml/min, stainless steel
- WD10002 pump head (incl. valves), 10 ml/min, stainless steel
- WD10003 pump head (incl. valves), 40 ml/min, stainless steel
- WD10004 pump head (incl. valves), 2 ml/min, PEEK
- WD10005 pump head (incl. valves), 10 ml/min, PEEK
- WD10006 pump head (incl. valves), 30 ml/min, PEEK
- WD10007 ball valve (2 required)
- WD90020 ball valve with spring (2 required)

## Model number key:

WADose-PLUS-HP-  
 WADose-LITE-HP-



e. g. **WADose-PLUS-HP-10-SS-U-S-C**

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