

PRECISE LIQUID DOSAGE USING A FLOW METER CONTROLLED PUMP

INTRODUCTION

Bronkhorst High-Tech B.V. manufactures the largest variety of thermal Mass Flow Meters and Controllers for gases and liquids. The L10/L20 Series Mass Flow Meters of the LIQUI-FLOW® Series are compact, modular instruments for capacities from 0,1...5 g/h up to 20...1000 g/h. For control applications they can be combined with integrated or separate control valves. This leaflet describes an alternative way of liquid flow control, viz. by using a close-coupled pump.

CONTROL VALVE OR CONTROLLED PUMP?

The concept of using a straightforward Mass Flow Controller is simple and economical. It requires a certain head pressure, which can be achieved by pressurising a vessel filled with liquid, for instance by using an inert gas blanket. In some applications this method is not possible or not recommended. The alternative of using a pump for fluid transfer seems logical, but was not always advisable because of the pulsating flow pattern of most low-flow pumps.

The new LIQUI-FLOW® Pump Controller has a rotary positive-displacement pump, which is virtually pulsation-free. It can easily be applied for low-viscous fluids in a control loop with a LIQUI-FLOW® Mass Flow Meter, using the standard controller function on its pc-board. Apart from operating the unit in an analog mode, it can also be used digitally with RS232 or with on-board interface to Profibus-DP®, DeviceNet™ or FLOW-BUS.

At the moment the LIQUI-FLOW® pumps can be offered in the ranges of 50...500 g/h, 100...1000 g/h and 400...4000 g/h, however, we advise you to contact our local distributor if you are interested in lower or higher flow ranges.



FEATURES

- simple and compact assembly
- no need to pressurise liquid source
- easy to use
- highly stable
- direct mass flow measurement/control
- high accuracy
- analog 0...5(10) V / 0(4)...20 mA or digital communication by RS232, Profibus-DP®, DeviceNet™ or FLOW-BUS

APPLICATIONS

LIQUI-FLOW® Pump Control offers precise, automated mass flow control of reactants, additives or catalysts in following fields of application:

- Analytical laboratories and systems
- Chemical industry
- Food industry
- Pharmaceutical industry
- Energy (fuel cells)
- Biotech industry