Micro Flowmeter System
for Liquids

THERMOCALORIMETRIC MEASUREMENT

The GeSiM caloric flow sensor measures small flow rates, such as those in microfluidic systems. For this purpose, the liquid is heated up slightly, the temperature profile is analyzed and digitalized by an integrated A/D-converter. This value turns into the volume flow which is obtained from a calibration curve[1] for the related liquid. The measurement range starts at less than one µl/min and goes up to approx. 100 µl/min[2]. Any influence exerted by the ambient temperature is minimized by the measurement principle.

The micro flowmeter comprises sensor modules and controller modules.

The sensor module housing contains threaded holes for standard fittings (UNF 1/4-28), so flanged tubes/capillaries can be connected. Optionally barbed tube adapters for screw-in are available.

The micro flowmeter connects to the serial port (RS232) of a PC through a dedicated controller module.

This module controls up to four flow sensors independently. The sensor modules are cascadable, for stacking onto the controller module. This stack is expandable by docking further controller modules and sensor modules. The maximum capacity of the stack is 16 sensor modules and four controller modules.
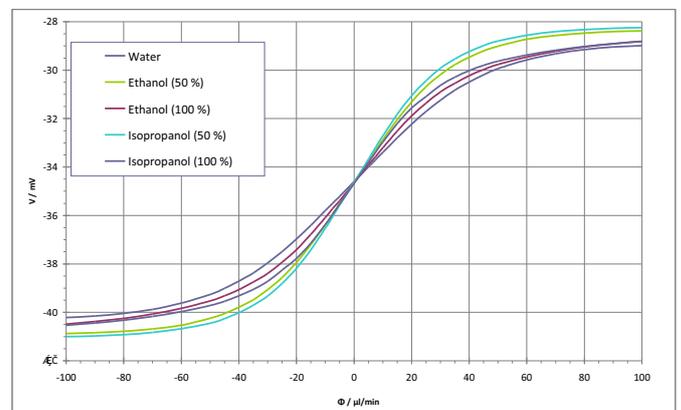
The first (main) controller module comes with connection cable, power adapter and PC software.
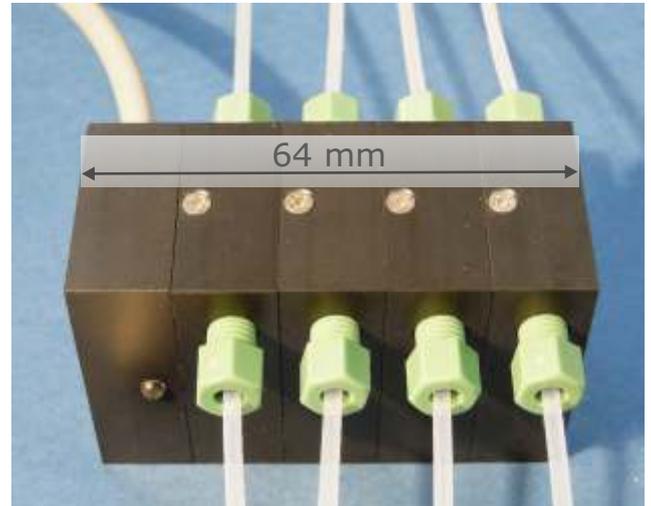
Stack with four cascaded flow sensors and one controller (left side)
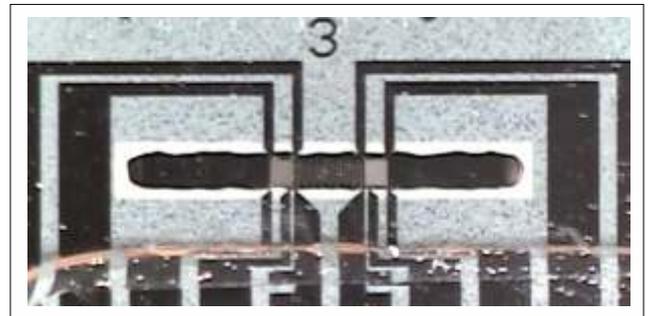
Detail of the sensor flow channel with heater (middle), surrounded by temperature sensors

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[1] *All sensors come with calibration curve for water. Please ask for a feasibility test with your specific liquid.*

[2] *Both sensitivity and measurement range are affected by the thermal porperties of the liquid used with the sensor. Measurement quality of very low but constant volume flows can be improved by averaging over a longer time period.*

Characteristic curve for diverse media

GeSiM

Components Available

Item	Order Code
Controller module for up to four sensors, including software, power adapter and documentation	A020-030
Extension controller for sensors five to eight	A020-032
Flow sensor (Basic module)	A030-015
Flow sensor (Extension module)	A030-014
Base pad for 2 modules 1x sensor, 1x controller	A020-040
Base pad for 5 modules	A020-041
Base pad for 10 modules	A020-042
Spacer for completion of base pads	A020-044
Tube, flanged on both ends, 300 mm	A072-072
Barbed adapter for tube 1/8-inch	A100-086
Barbed adapter for tube 1/16-inch	A100-111

Please aks for special connection tubes.
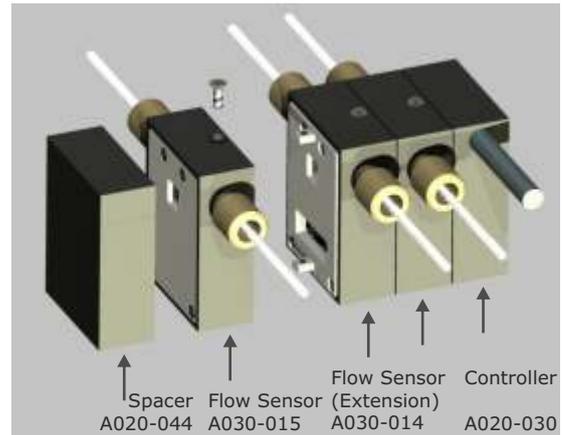
*How to configure a 3-channel flowmeter? These five modules fit exactly to the base pad A020-041*

Measurement Software

The measurement software displays the results numerically as well as graphically (diagram). Reference measurements provide calibration curves for different liquids.
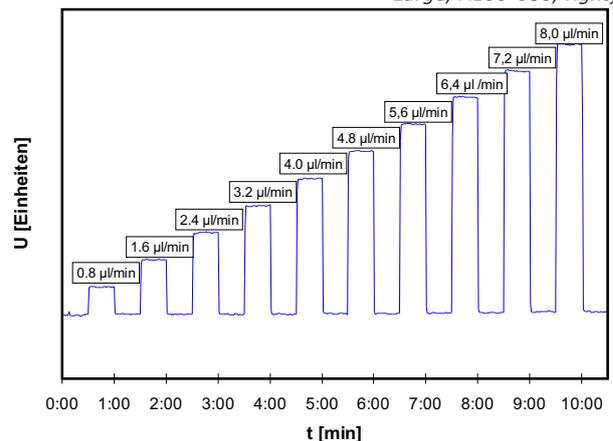An export function saves the data for import into spreadsheet programs.

Base pad to host five modules (A020-041)
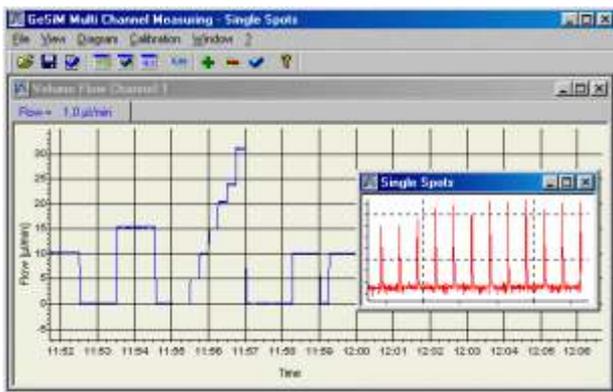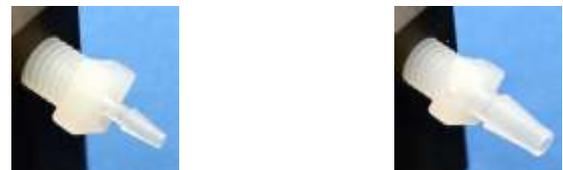
Barbed adapters (Small, A100-111, left, Large, A100-086, right)

PC Software

Sensor raw signal for different flows, generated by a piezoelectric micro dispenser (GeSiM) emitting drops at different frequencies)

Subject to change without notice

2014