



# Micromechatronics Inc.

200 Innovation Blvd., Suite 155 ; State College, PA 16803-6602, USA  
 Phone: (814) 861-5688 ; Fax: (814) 861-1418. www.mmech.com

## HLF 810/820 Ultrasonic Flowmeter



### FEATURES

- Unique arithmetic processing by DSP (Digital Signal Processor) makes stable flow measurement.
- 2- channel measurement reduces cost reduction and saves space.
- Easy installation with detachable cable.
- No moving parts inside of the sensor and minimal pressure loss.
- All the liquid contact surfaces are made of New PFA resisting against DIW and various chemical liquids.
- Conforms to EMC Standard (EN61326) and complies with RoHS directive.
- Choice of display with the HLF820 or no display with the HLF810.

### APPLICATIONS

- Flow measurement of DIW or ultra-pure water for the semiconductor manufacturing process
- Flow control of high corrosive chemical liquid
- Flow control of slurry liquid for CMP (Chemical Mechanical Polishing)

### Converter

SPECIFICATIONS		HLF810	HLF820
Measuring Method		Time of Flight method	
Accuracy		±1%F.S. (DIW at 20°C)	
Data update cycle		10 msec	
Power Source	Voltage	24 VDC ± 10%	
	Power Consumption	Approx. 4W	Approx. 5W
Display		-	VFD (16 characters/2 line)
Digital Input		Open collector or Non-voltage contact input x 2 Selectable from integrated value reset or 0 (zero) point adjustment input	
Output	4-20mA current output	2 Resolution: 12 bit (RL(Max) = 600Ω)	
	Digital	Open Collector (Max 35v/0.1A)output x 2 Selectable from comparison, integrated pulse, instantaneous frequency or Error output	
Interface		RS-485 (MODOBUS protocol, RTU mode) Up to 32 converters can be contained (Address setting: 1-32) Baud rate: 9600, 19200, 38400, or 57600 bps	
Housing Material		ABS	
Operating Temperature		0 - 50°C (No condensation)	
Weight		130g	230g
Installation		DIN Rail	Panel Mount



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### Sensors

Model No	HLFS01-04	HLFS01-06	HLFS01-08	HLFS01-12
Application	Ultrapure water/Pure water/chemical liquids			
Flow rate range	0-2L/min	0-6L/min	0-20L/min	0-50L/min
Tube size	¼ inch	3/8 inch	½ inch	¾ inch
Max operating pressure	0.5Mpa (0-90 °C) / 0.2MPa (90-200 °C)			
Max fluid temp.	Standard type: 0-90 °C, High-temperature type: 0-200 °C (04 type: 0-180 °C)			
Operation temp.	0-80 °C			
Wetted surfaces	New PFA			
Weight	90g	110g	130g	160g
Pressure loss factor (A)	3.7863	0.6937	0.1146	0.0138

Pressure Loss:  $\Delta P=AQ^2$

$\Delta P$ : Pressure Loss (kPa)    A: Pressure Loss Factor (20 °C pure water)    Q: Flow rate (L/min)

### Connection cable between converter and sensor

Model No	HLF01 cable 5m	HLF01 cable 7m
Material	ETFE	
Cord length	5m	7m
Weight	150g	210g