

ULTRASONIC FLOWMETER

# HLF800 series

High accuracy flow measurement of DIW and chemical at temperatures up to 200 deg C

## 1 inch sensor launch!!



Converter HLF810

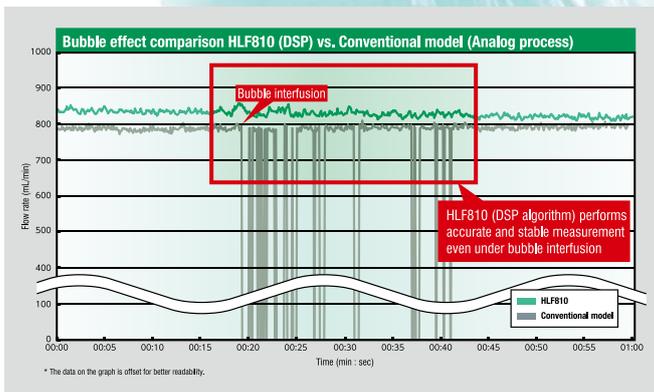


Converter HLF820



### Features

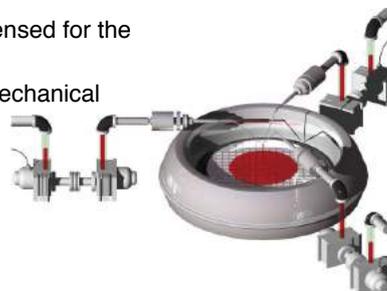
- Unique arithmetic processing by DSP (Digital Signal Processor) makes stable flow measurement.
- 2-channel measurement helps cost reduction and space-saving.
- Easy installation with detachable cable.
- No moving part inside of the sensor and low pressure loss.
- All the wetted surfaces are made of NEW PFA resisting against DIW and various chemical liquids.
- Selectable from either HLF820 with display or HLF810 without display.



- Conformed to EMC standard (EN61326) and complied with RoHS directive.

### Applications and examples

- Flow measurement of DIW or ultrapure water for the semiconductor manufacturing process
- Flow control of high corrosive chemical liquids to be dispensed for the manufacturing process
- Flow measurement of slurry liquids for CMP (Chemical Mechanical Polishing) process



U-Shaped sensor



Z-Shaped sensor

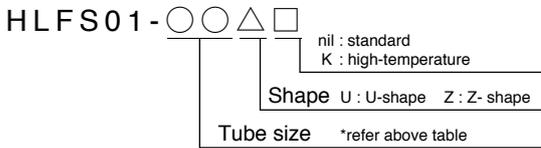
Specifications



Converter

|                       |   |   |
|-----------------------|---|---|
| Model No.             | HLF810  | HLF820  |
| Measuring method      | Time-of-flight measurement method   |   |
| Accuracy              | ±1%F.S.(DIW at 20°C)  |   |
| Data update cycle     | 10 msec   |   |
| Power source          | 24 VDC ±10%   |   |
| Power consumption     | Approx. 4W  | Approx. 5W  |
| Display               | VFD (16 characters / 2 line)  |   |
| Digital input         | Open collector or Non-voltage contact input x2<br>Selectable from integrated value reset or 0 (Zero) point adjustment input                     |   |
| Output                | 4-20mA current output   | Resolution:12bit (RL(Max)=600Ω)<br>Open collector(Max 35v / 0.1A)output x2            |
|                       | Digital   | Selectable from Comparison, integrated pulse, Instantaneous frequency or Error output |
| Interface             | RS-485 (MODBUS protocol, RTU mode)<br>Up to 32 converters can be contained (Address setting: 1- 32)<br>Baud rate:9600, 19200, 38400 or 57600bps |   |
| Housing material      | ABS   |   |
| Operating temperature | 0 - 50°C (No condensation)  |   |
| Weight                | 130g  | 230g  |
| Installation          | DIN rail  | Panel mount   |

Type name and specification



Sensor

|                        |   |              |               |               |               |
|------------------------|---|--------------|---------------|---------------|---------------|
| Model No.              | HLFS01-04                                       | HLFS01-06    | HLFS01-08     | HLFS01-12     | HLFS01-16     |
| Application            | Ultrapure water / Pure water / Chemical liquids |              |               |               |               |
| Flow rate range        | 0 - 2L / min                                    | 0 - 6L / min | 0 - 20L / min | 0 - 50L / min | 0 - 80L / min |
| Tube size              | 1/4 inch  | 3/8 inch     | 1/2 inch      | 3/4 inch      | 1 inch        |
| Max operating pressure | 0.5MPa (0 - 90°C) / 0.2MPa (90 - 200°C)         |              |               |               | *1            |
| Max fluid temp.        | Standard type                                   | 0 - 90°C     |               |               | -             |
|                        | High-temp. type                                 | 0 - 180°C    | 0 - 200°C     |               |               |
| Operation temperature  | 0 - 80°C  |              |               |               |               |
| Wetted surface         | NEW PFA   |              |               |               |               |
| Weight                 | 90g   | 110g         | 130g          | 160g          | 212g          |
| Pressure loss factor   | 3.7863  | 0.6937       | 0.1146        | 0.0138        | 0.0032        |

\*1 0.5MPa (0 - 60°C) / 0.2MPa (60 - 200°C)

Pressure loss

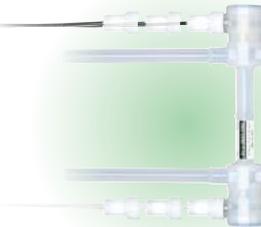
$\Delta P = A Q^2$      $\Delta P$  : Pressure loss[kPa]    A : Pressure loss factor (20°C pure water)    Q : flow rate[L/min]

Connection cable between converter and sensor

|             |                |                |
|-------------|----------------|----------------|
| Model No.   | HLF01 cable 5m | HLF01 cable 7m |
| Material    | ETFE           |                |
| Cord length | 5m             | 7m             |
| Weight      | 5m             | 210g           |

Detachable cable enables easy installation

Sensor cable can be detached at the sensor unit, therefore the installation of sensor unit can be done without cable. The cable length can be selected from 5 m or 7 m.

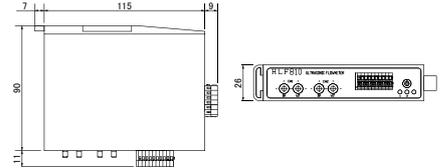


\*Contents of this leaflet are based on data on December,2016  
 \*Specifications and design of the products may be changed for improvement without notice.  
 \*Colors of actual products may differ from pictures in the leaflet cause of print.

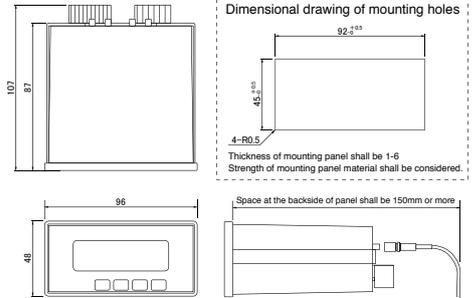
Outline drawing

Converter HLF810

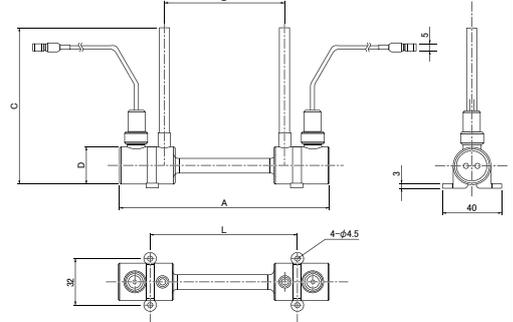
(Unit:mm)



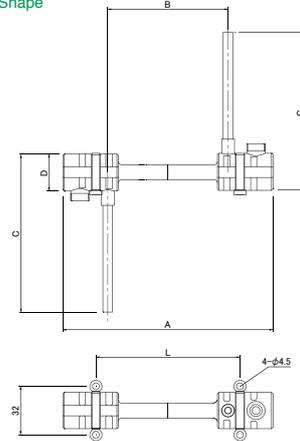
Converter HLF820



Sensor HLFS01 U-Shape



Z-Shape



| Model No. | A     | B   | C     | D     | L     |
|-----------|-------|-----|-------|-------|-------|
| HLFS01-04 | 138   | 80  | 105   | φ25   | 94.6  |
| HLFS01-06 | 145   | 80  | 125   | φ25   | 101.6 |
| HLFS01-08 | 178   | 110 | 125   | φ25   | 134.6 |
| HLFS01-12 | 184   | 110 | 125   | φ25   | 140.6 |
| HLFS01-16 | 191.6 | 110 | 131.5 | φ31.5 | 148.2 |



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