UCUF-SB/SFC011SB Ultrasonic Flowmeter

DESCRIPTION

The UCUF-SB ultrasonic flowmeter is designed for measuring low flow rate of hyperpure water or various chemical fluids. All the fluid contact portion are made of PFA for the semiconductor industry, and the flowmeter has no movable portion nor mechanical sealing such as O-ring which may cause fluid detention. This flowmeter is most suitable for processes requiring high-level cleanliness of semiconductor manufacturing equipment, etc.



The SFC011SB is a converter for UCUF that enables simultaneous measurement of up to 6 lines. Using state-of-the-art technologies such as Digital Signal Processing, the converter has reduced significantly the adverse effects caused by the bubbles contained in semiconductor and chemical liquid handling processes.

FEATURES

- **Energy saving and space saving**
  One SFC011SB unit enables simultaneous measurement of up to six lines. In addition, daisy chaining of multiple units without resorting to crossover wiring is possible.

- **High-speed processing**
  30-ms processing.

- **Zero adjustment**
  By performing zero adjustment before measurement, you can start the measurement for the fluid under the optimum conditions.

- **Abundant functions**
  - 7Seg LED (red, 4 digits) indicates instantaneous flow rate and status.
  - Various analog outputs of instantaneous flow rate (select according to output types).
  - Frequency output (1 kHz F.S.), error output, instantaneous flow rate upper/lower limit alarm, integrated flow rate output, and integrated flow rate upper limit alarm (open collector).
  - RS-485 communication enables parameter settings and flow rate data acquisition
    * RS-485 communication converter (sold separately) is required.

- **Applicable standards**
  - Applicable EMC standards: EN61326-1 and EN61326-2-3
  - RoHS2 compliant

STANDARD SPECIFICATIONS

Detector specifications

- Flow range : 04SB : 0 to 50 mL/min (minimum)
  0 to 3000 mL/min (maximum)
  Standard calibration accuracy : 04SB : ±1% R.D. of the indicated value (800 mL/min or more)
  ±8 mL/min (below 800 mL/min) * When using water of 23°C
- Process connection : PFA tube end
- Connecting tube size : O.D.6 mm, 1/4″
- Protection category : Equivalent to IP65 (for indoor installation)
- Installation : M3 through hole (2 elongated slots of ϕ3.2 having a length of 5.2 mm)
  Body weight : Approx. 60 g
  Body material
  Body (fluid contact portion) material: New PFA (PFOA free)
  Body (housing) material: PPS
  Sensor/cable cap material: PP
  cap seal material : Fluororubber
- Sensor cables : 2 coaxial cables (IN/OUT)
- Cable weight : Approx. 70 g/piece
- Cable length : 3 m (Standard)
- Sheath material : PVC

Converter specifications

Power supply I/O specifications

- Power supply voltage : 24 VDC ± 10%
- Current consumption : Approx. 350 mA
- Inrush current : Approx. 800 mA
- Display : 4 digits (instantaneous flow rate, status)
- Digital output : Select from frequency, integration, alarm, and error
  Open collector, duty 1:1
  Load resistance within 30 V DC, 10 mA
- Analog output : 4 to 20 mA DC (Standard)Load resistance 500Ω or less
  * The output type can be selected depending on the model.
- Communication protocol : RS-485 Half duplex, asynchronous
  Modbus Protocol, RTU mode
  Baud Rate 57.6kbps
  Data size 8bits
  Parity Even
  Stop bit 1bit
  Address Switch 1 to 32

Function, configuration specifications

- Parameter settings : Settings by dedicated configuration software
- Ambient temperature : Single: 0 to 45°C, Combined: 0 to 25°C
- Ambient humidity : 30% to 80% RH (without condensation)
- Installation : DIN rail installation
- Structure : Equivalent to IP20 (indoor use)
- Housing material, color : Heat resistant ABS resin (white)
- Mass : Approx. 250 g (including power supply terminals)
- Applicable detector : UCUF-SB Series
- Applicable standard : Standards for EMC compliance: EN61326-1, EN61326-2-3 RoHS2 compliant

FLUID SPECIFICATIONS

- Measurement target : All liquids (Without air bubbles. If using a mixture of liquids, it must be evenly dissolved.)
- Fluid temperature : +10 to +60°C
- Ambient temperature : 0 to +60°C
- Fluid pressure : 0 to 0.5 MPa (G)
- Fluid sound speed : 1000 to 2200 m/s
- Fluid kinematic viscosity : 0.3 to 40.0 mm^2/s
- Pressure loss : Normal temperature water pressure loss (kPa) = C×Q2
  C : 6.0 (04SB)
  Q : Flow rate (L/min)

MODEL CODE

Converter (SFC011SB)

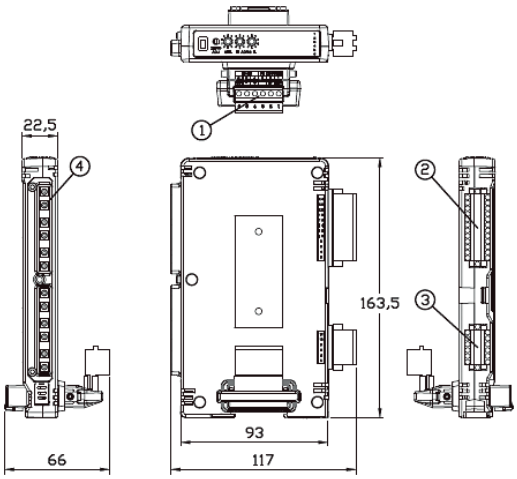
SFC011SB	-□	Description
Analog output	-0	4 to 20 mA
	-1	0 to 20 mA
	-2	1 to 5 V
	-3	0 to 5 V

Detector (UCUF-SB)

UCUF	04SB	□□□	□□	Tube Outer diameter [mm] x inner diameter [mm]
Tube		—	—	6×4
		063	—	6.35×4.35
Special specifications			/Z	

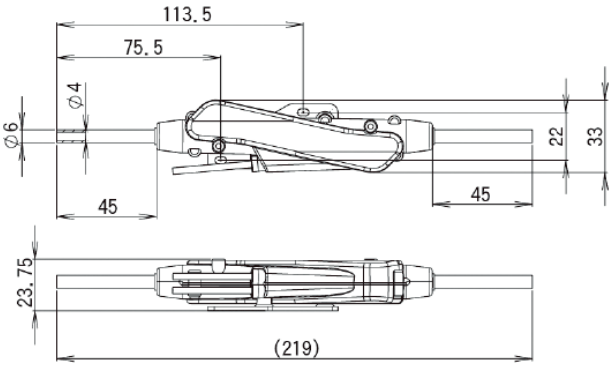
OUTLINE DRAWING

Converter (SFC011SB)



Detector (UCUF-SB)

・UCUF04SB



CONVERTER TERMINALS

① Power supply terminal

Terminal	Description
1	24 VDC
2	0 V
3	FG
4	RS-485+
5	RS-485-
6	SG

② Digital output terminal

Terminal	Description
1	CH1 output+
2	CH1 output-
3	CH2 output+
4	CH2 output-
5	CH3 output+
6	CH3 output-
7	CH4 output+
8	CH4 output-
9	CH5 output+
10	CH5 output-
11	CH6 output+
12	CH6 output-

* Note: Terminals 13 to 24 are not used.

③ Analog output terminal

Terminal	Description
1	CH1 output+
2	CH1 output-
3	CH2 output+
4	CH2 output-
5	CH3 output+
6	CH3 output-
7	CH4 output+
8	CH4 output-
9	CH5 output+
10	CH5 output-
11	CH6 output+
12	CH6 output-

④ Sensor connector

CH6	6
CH5	5
CH4	4
CH3	3
CH2	2
CH1	1

*Specification is subject to change without notice.

SPS
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