UCL/SFC011C Clamp-On Ultrasonic Flowmeter



DESCRIPTION

UCL/SFC011C is a clamp-on ultrasonic flowmeter for PFA piping. There is no need for additional piping work because the flow rate can be measured just by sandwiching the existing tube. The piping is virtually kept clean.
This meter is most suitable for processes requiring cleanliness of semiconductor manufacturing equipment, etc.

FEATURES

- **Clamp-On:**
  The flow rate can be measured simply by sandwiching the existing tube with the meter. It is essentially clean because it does not come in contact with the inside of the pipe.
- **Energy saving and space saving**
  One SFC011C unit enables simultaneous measurement of up to six lines. Multiple units can be connected to each other (No need for crossover wiring).
- **High-speed processing**
  30-ms high-speed processing
- **Zero adjustment**
  By performing zero adjustment before measurement, you can start the measurement for the fluid under the optimum conditions.
- **Abundant functions**
  - The seven-segment LED display (red, 4 digits) indicates the 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 setting and flow rate data acquisition.
    *RS-485 communication converter (sold separately) is required.
- **Applicable standard**
  - Applicable EMC standards: EN61326-1, EN61326-2-3
  - RoHS2 compliant

STANDARD SPECIFICATIONS

- **Flow detector UCL specifications**

Construction	: Equivalent to IP64 (indoor use, when installed to piping)
Product weight	: Approx. 120 g for small diameter (cable length 0,2 m)
	: Approx. 90 g for large diameter (cable length 0,2 m
Body material	: PPS (clamp band for large diameter: PP)
Product cable material	: PTFE coating
Relay cable material	: PVC coating

STANDARD SPECIFICATIONS CONTINUED

- **Converter SFC011C specifications**

Power supply I/O specification

Power supply voltage	: 24 V DC ±10%
Current consumption	: Approx. 350 mA
Inrush current	: Approx.800 mA
Display	: 4 digits (instantaneous flow rate, status)
Digital output	: Selected from frequency, integration, alarm, and error. Open collector, duty 1:1 Load resistance 30 V DC, within 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	57.6 kbps
Data size	8 bits
Parity	Even
Stop bit	1bit
Address Switch	1 to 32

Function, configuration specification

Parameter setting	: Setting by dedicated configuration software or read from the detector with built-in memory.
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)
Weight	: Approx. 250 g (including power supply terminals)
Conforming detector	: UCL series
Applicable standard	: Applicable EMC standards: EN61326-1 and EN61326-2-3 RoHS2 compliant

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FLUID SPECIFICATION

Measurement target	: Liquids in general (without bubbles)
Fluid temperature	: 10 to 60°C
Ambient temperature	: 0 to 60°C
Fluid pressure	: 0 to 0.5 MPa
Sound velocity in the fluid	: 1000 to 2200 m/s
Kinematic viscosity of the fluid	: 0.8 to 40.0 mm^2/s

TUBE SIZE, FLOW RANGE, AND ACCURACY

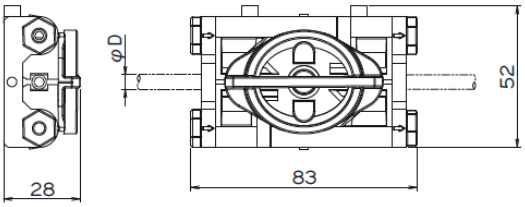
Connecting tube size Outer diameter [mm] × inner diameter [mm]		Flow range [L/min]	Flow rate [L/min]]	Accuracy *1 [L/min]	Flow rate [L/min]	Accuracy *1 [%R.D.]
mm size	6 × 4	0 to 3	0 to 0.8	±0.015	0.8 to 3	±2
	8 × 6	0 to 8	0 to 1.7	±0.034	1.7 to 8	±2
	10 × 8	0 to 8	0 to 3.0	±0.060	3.0 to 8	±2
Inch size	6.35 × 3.95	0 to 3	0 to 0.8	±0.015	0.8 to 3	±2
	6.35 × 4.35	0 to 3	0 to 0.9	±0.018	0.9 to 3	±2
	9.53 × 6.38	0 to 8	0 to 1.9	±0.038	1.9 to 8	±2
	9.53 × 7.53	0 to 8	0 to 2.7	±0.053	2.7 to 8	±2
	12.70 × 9.55	0 to 20	0 to 4.3	±0.085	4.3 to 20	±2
	19.05 × 15.90	0 to 50	0 to 11.8	±0.235	11.8 to 50	±2
	25.40 × 22.25	0 to 80	0 to 23.3	±0.464	23.3 to 80	±2

*1 Accuracy in factory calibration with purified water at 20°C.

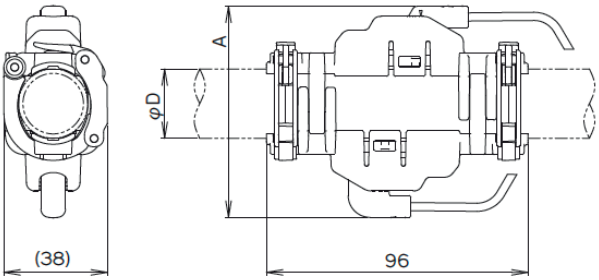
OUTLINE DRAWING

Detector (UCL)

Small diameter

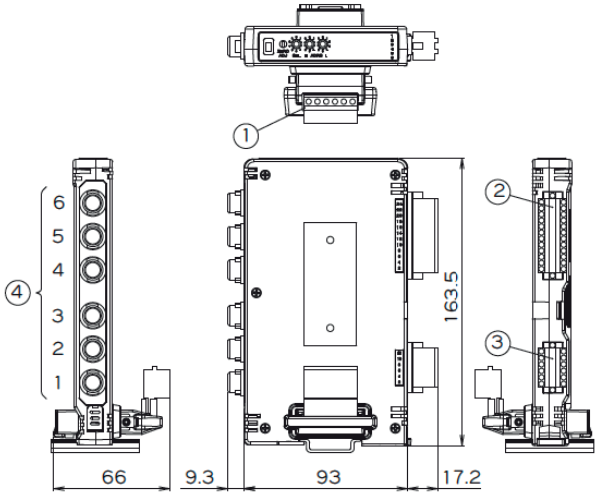


Large diameter



Category	Model code	Dimension [mm]	
		D	A
Small diameter	UCL060	6	–
	UCL080	8	–
	UCL100	10	–
	UCL063	6.35	–
	UCL095	9.53	–
Large diameter	UCL127	12.70	(65)
	UCL190	19.05	(71)
	UCL254	25.40	(78)

Converter (SFC011C)



CONVERTER TERMINALS

① Power supply terminal

Terminal	Description
1	24 V DC
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

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MODEL CODE

Detector (UCL)

UCL		□□□	–□	–□	Connecting tube size Outer diameter [mm] × inner diameter [mm] *2
Connecting tube	mm size	060	–D	–	6 × 4
		080	–D	–	8 × 6
		100	–T	–	10 × 8
	Inch size	063	–D	–	6.35 × 3.95
			–T	–	6.35 × 4.35
		095	–D	–	9.53 × 6.38
			–T	–	9.53 × 7.53
		127	–D	–	12.70 × 9.55
		190	–D	–	19.05 × 15.90
		254	–D	–	25.40 × 22.25
Cable type				–M	With memory (standard : PTFE coating 0.2 m)

Converter (SFC011C)

SFC011C	–□	Description
Analog output	–0	4–20 mA
	–1	0–20 mA
	–2	1–5 V
	–3	0–5 V

*2 Contact us if you use a tube of an unlisted size.

*Specification is subject to change without notice.

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