

SR Series SANITARY FLOWMETER (GLASS TUBE, METAL TUBE)

OUTLINE

TOKYO KEISO can offer variable area flowmeters for sanitary process.

The SR series is a variable area flowmeter designed and manufactured for sanitary services. The IDF sanitary clamps or unions make its installation on the piping or removing easy. All the liquid wet parts are buff polished.

There are several types available. One is a glass tube flowmeter model R-101-SR with a simple construction which indicates flow rate locally by a float and scale graduation. The other types are metal tube flowmeters which have two models, AM7000/SR and AM-1000-SR.

In addition to the local flow rate indication the various functions can be selected from pneumatic, current, alarm outputs and local totalization with a scaled pulse output.

In this Technical Guidance the specifications of AM-1000-SR are described. See the Technical Guidance of AM7000/SR also.



FEATURES

- ☐ IDF standard clamps and Screw union connection for easily mounting and dismounting.
- ☐ Buff polished inner surface and fluorocarbon sealing
- ☐ Straight through self-draining design
- ☐ For cleaning and maintenance of metal tube type, its construction with clamps makes it easier to disassemble the indicator and transmitter housing.
- ☐ Versatile functions including pneumatic and electric outputs are available for metal tube type.

Cautions on the use of glass tube variable area flowmeters

CAUTION

Avoid the use of glass tube variable area flowmeters for the following services.

1. Liquid services subject to impulse pressure in the process.
2. Secondary accidents might occur due to the breakage of glass in such services :
 - Toxic fluids such as poisons, stimulant and narcotics
 - Flammable fluids
 - Explosive fluids
3. Gas handling process where breakage of glass might result in gas leakage or scattering of glass fragments.
4. The installation places of the flowmeters where breakage of glass might be caused by the accidents from the surrounding piping or equipment.
5. On-off operation where breakage of glass might be caused by the collision of the float inside meter due to the abrupt change of flow.
6. Services where the heat shock by abrupt change of temperature is expected.

GENERAL

AM -1000 -SR is a series of metal tube sanitary rotameters.

All liquid wetting parts are made of stainless steel and buff polished. Also fluorocarbon resin sealing is used to offer better sanitary specification.

Different functions are available to meet process control requirements.

The AM7000/SR series sanitary flowmeter uses a highly functional compact indicator, upgraded from that of the AM-1000-SR series. The communication function (HART, Profibus-PA) is also added.

For details, see the Technical Guidance for the AM7000 series.

STANDARD SPECIFICATION

● MODEL AND FUNCTION :

AM-1401-SR	LOCAL INDICATION
AM-1311-SR	LOCAL INDICATION + PNEUMATIC OUTPUT
AM-1521-SR	LOCAL INDICATION + ELECTRIC OUTPUT(DC4~20mA)
AM-1691-SR	LOCAL INDICATION + LOCAL TOTALIZATION + SCALED PULSE OUTPUT
AM-1741-SR	LOCAL INDICATION + ALARM CONTACT(S)

- AVAILABLE METER SIZE : 20, 25, 40, 50, 65, 80 and 100mm
- IDF CLAMP(UNION) SIZE : 1S,1.5S, 2S, 2.5S, 3S, 3.5S and 4S
- PROCESS CONNECTION : IDF CLAMP or UNION SCREW
- FLOW DIRECTION : BOTTON to TOP
- SCALE RANGE(WATER) : MIN. 0.01 to 0.1m³/h
MAX. 7 to 70m³/h

- MAX OP. PRESS. : 0.68MPa
- MAX OP. TEMP. : 200°C

* : It is general data, and the maximum temperature may change by terms of use and environment.

- ACCURACY (LOCAL INDICATION) : ±1.5% F.S.

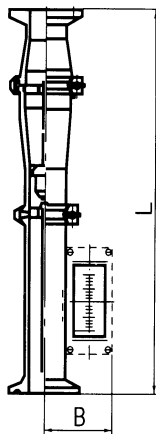
● MATERIAL :

TAPERED TUBE	SUS304 (SUS316, SUS316L) with #320 to #400 Buff polishing (inner and outer) *
BODY TUBES	SUS304 (SUS316, SUS316L) with #320 to #400 Buff polishing (inner and outer) *
FLOAT	SUS304 (SUS316, SUS316L) with #320 to #400 Buff polishing *
SEAL	NBR (FPM, Silicone rubber, PTFE)

* Electrolytic polishing is also available as an option.



DIMENSION AND SCALE RANGE



METER SIZE	CONNECTION SIZE	L (mm)*1	B (mm)	POSSIBLE SCALE RANGE (m ³ /h) * 2	SCALE RANGE (Density 1.0g/cm ³ and 1.0mPa·s viscosity) (m ³ /h)
20mm	1S	550	89	MIN. 0.01 to 0.1 MAX. 1.6	MIN. 0.01 to 0.1 MAX. 1.6
25mm	1S,1.5S	550	92	MAX. 4.0	MAX. 4.1
40mm	1.5S,2S	550	99	MAX. 7.1	MAX. 10
50mm	2S,2.5S	550 ^{*3}	105	MAX. 15.0	MAX. 20
65mm	2.5S,3S	600	113	MAX. 27.5	MAX. 30
80mm	3S,3.5S	600	120	MAX. 40.5	MAX. 40.5
100mm	4S,4.5S	600	132	MAX. 70.0	MAX. 70.0

* 1:L dimension is common both for Clamp and Screw connection.

* 2:POSSIBLE SCALE RANGE is indicated by flow rate of water.
(Density 1.0g/cm³ and 1.0mPa·s viscosity)

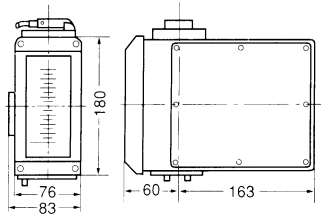
In case the measuring object different from above,
a conversion calculation is required. Consult factory for details.

* 3:L dimension will be extended by 50mm if flow rate is more than 15m³/h.

SPECIFICATION OF TRANSMITTER AND INDICATOR

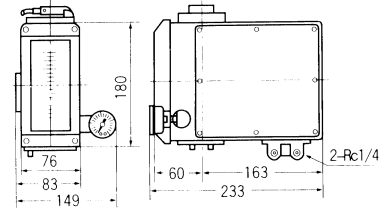
● AM-1401-SR
Local indication type

DIMENSION OF INDICATOR



● AM-1311-SR
Local indication + Pneumatic output type

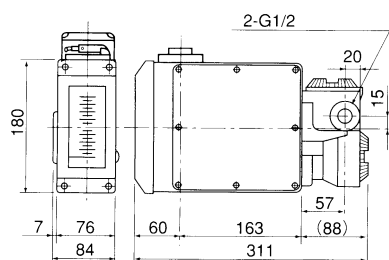
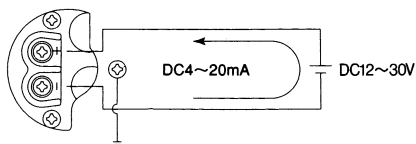
Air supply : 0.14 ± 0.01 MPa
 Outputs : Standard 20 to 100kPa
 (with output gauge)
 Air consumption : 14L/min(nor)
 Connection : Standard Rc 1/4
 On request NPT 1/4
 Output accuracy : $\pm 1.0\%$ F.S.
 Construction : Weather proof (Equ. to IP54)
 Ambient Temp : -20 to 80°C
 Provide heat insulation if required.
 Accessory : Air set (On request)



● AM-1521-SR
Local indication + Electric output type

Power supply voltage : Weather proof and flame proof
 DC12 to 30V
 Output : DC4 to 20mA
 Max load : Weather proof and flame proof
 600Ω (DC24V)
 Cable entry : Weather proof :
 2xG1/2 or 2xNPT1/2
 Flame proof :
 2xG1/2 or 2xNPT1/2
 Option :
 Packing type cable gland
Specified cable gland (Type SXC-16B Shimada Electric Co.) to be used for flame proof construction work.
 Output accuracy : $\pm 1.0\%$ F.S.
 Construction : Weather proof ;
 Equ. to IP54 AM-152□
 Flame proof ;
 Exd II BT4 EP-AM-152□
 On request ;
 Exd II CT4 EP-AM-152□
 Amb. temp. : Weather proof ; -30 to $+70^{\circ}\text{C}$
 Flame proof ExdII BT4 ;
 -20 to $+55^{\circ}\text{C}$
 ExdII CT4 ;
 -20 to $+55^{\circ}\text{C}$

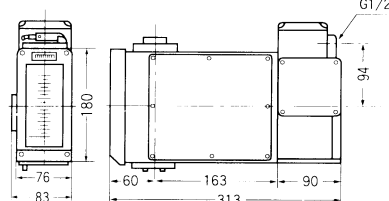
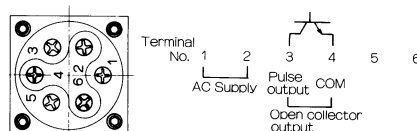
● Terminal and wiring



● AM-1691-SR
Local indication + Totalization
+ Scaled Pulse output type

Integration : 6 digit with reset
 Count rate : 50 to 2000c/h
 Pulse output : Open collector output
 Pulse width 100ms,
 Rating DC35V, 50mA
 (Signal circuit and power supply circuit are isolated.)
 Integration accuracy : $\pm 2.0\%$ F.S.
 Power supply : AC100V, 50/60Hz as standard. AC110V, 50/60Hz is also available on your request except flame proof version.
 A separate transformer is required for other voltage.
 Power consumption : Max. 5VA
 Cable entry :
 Standard : G1/2 with female screw
 Cable gland with flameproof gasket available on request
 On request : NPT1/2
 Enclosure : Weather proof (Equ. to IP54)
 type AM-169□
 Flame proof (JISd2G4) type EP-AM-169□
 Ambient temp : -20 to 80°C
 for type AM-169□
 -10 to 60°C
 for type EP-AM-169□
 Provide heat insulation if required

● Wiring diagram



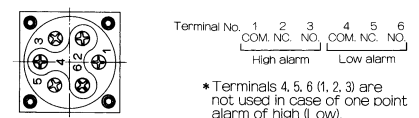
● AM-1741-SR
Local indication + Alarm Contact(s) type

Alarm point : 1 point high alarm or
 1 point low alarm or
 2 points high and low
 Switch : Micro switch SPDT
 Rating :
 Standard : AC 125/250V, 5A
 On request : DC 30V, 0.1A
 Reset span : Weather proof and Intrinsically safe within 20% (F.S.)
 Flame proof EP-AM-174□ within 30% (F.S.)
 Cable entry :
 Standard : G1/2 with female screw
 Conduit connection is standard. Packing type cable gland is also available.
 On request : NPT 1/2
 Enclosure : Weather proof (Equ. to IP54) type AM-174□
 Flame proof (JISd2G4) type EP-AM 174□
 Intrinsically safe (ExialICT6) type IS-AM-174□*
 * Supplied with safety barrier
 Ambient temp : -25 to 80°C
 for type AM-174□
 -10 to 60°C
 for type EP-AM-174□
 IS-AM-174□
 Provide heat insulation if required

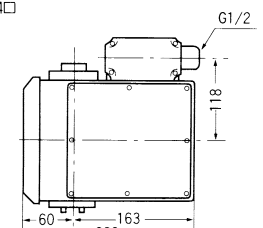
● Wiring diagram



AM-174□ and IS-AM-174□



EP-AM-174□



GENERAL

R-101-SR is a series of glass tube sanitary flowmeters with simple, easy-to-read construction and reliable performance.

STANDARD SPECIFICATION

FUNCTION : LOCAL INDICATION

AVAILABLE METER SIZE : 10,15,20,25,40 and 50mm

POSSIBLE IDF CLAMP(UNION) SIZE : 1S,1.5S,2S,2.5S, and 3S

PROCESS CONNECTION : IDF CLAMP or UNION SCREW

FLOW DIRECTION : BOTTOM to TOP

POSSIBLE SCALE RANGE(WATER) : MIN. 5 to 50 L/h
MAX. 4 to 40 m³/h

MAX OP. PRESS : 0.68MPa (Meter size 25mm or smaller)
0.58MPa (Meter size from 40 to 65mm)

MAX OP. TEMP. : 120°C

* : It is general data, and the maximum temperature may change by terms of use and environment.

ALLOWABLE THERMAL SHOCK : 80°C

ACCURACY (LOCAL INDICATION) : ±1.5% F.S.

MATERIAL :

TAPERED TUBE : Heat-resistant glass

BODY TUBES : SUS304 (SUS316, SUS316L) with #320 to #400 Buff polishing
(inner and outer) *

FLOAT : SUS304 (SUS316, SUS316L) with #320 to #400 Buff polishing *

SEAL : NBR (EPDM, CR)

COLUMN : SUS304

COVER : Transparent PVC (option)

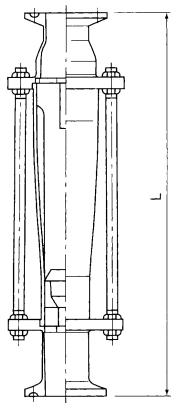
* Electrolytic polishing is also available as an option.



DIMENSION AND SCALE RANGE

□ R-101-SR ribbed tapered tube version (Scale length = Approx. 200mm)

□ R-101-SRE wide scale range with float rod version
(Scale length = Approx. 100mm)



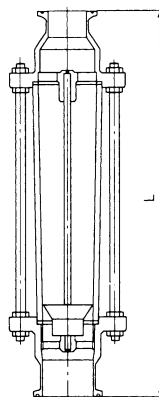
METER SIZE	CONNECTION SIZE	L (mm) *1	POSSIBLE SCALE RANGE (L/h) *2
10mm	1S	450	MIN. 5 to 50 MAX. 150
15mm	1S	450	MAX. 450
20mm	1S	450	MAX. 950
25mm	1S,1.5S	550	MAX. 1750
40mm (1)	1S,1.5S,2S	550	MAX. 2500
40mm (2)	1.5S,2S	550	MAX. 4250
50mm	2S,2.5S	550	MAX. 7600

*1:L dimension is common both for Clamp and Screw connection.

*2:POSSIBLE SCALE RANGE is indicated by flow rate of water.

(Density 1.0g/cm³ and 1.0mPa·s viscosity)

In case the measuring object different from above,
a conversion calculation is required. Consult factory for details.



METER SIZE	CONNECTION SIZE	L (mm) *1	POSSIBLE SCALE RANGE (m ³ /h) *2	SCALE RANGE (Density 1.0g/cm ³ and 1.0mPa·s viscosity) (m ³ /h)
15mm	1S,1.5S	350	MAX. 0.25 to 1.3	MAX. 1.6
20mm	1S,1.5S	350	MAX. 2.8	MAX. 4
25mm	1S,1.5S	350	MAX. 4.5	MAX. 6.5
40mm	1.5S,2S	400	MAX. 10	MAX. 16
50mm	2S,2.5S	400	MAX. 15.5	MAX. 28
65mm	2.5S,3S	420	MAX. 23	MAX. 40

*1:L dimension is common both for Clamp and Screw connection.

*2:POSSIBLE SCALE RANGE is indicated by flow rate of water.

(Density 1.0g/cm³ and 1.0mPa·s viscosity)

In case the measuring object different from above,
a conversion calculation is required. Consult factory for details.

Alarm contact version is available. Consult factory for details.

* Specification is subject to change without notice.

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