



TECHNICAL GUIDANCE

For foods, beverages, cooking
oil, brewing and fine chemicals

AM7000/SR Series SANITARY FLOWMETER (METAL TUBE)

GENERAL

The AM7000/SR series is a variable area flowmeter designed and manufactured for sanitary services. The ISO ferrule clamps make its installation on the piping or removing easy. All the liquid wet parts are buff polished. In addition to the reliable local flow indicator with a simple and rigid mechanism, various functions are available including electric transmission, and local integration with pulse or alarm output as well as remote communication as standard.

FEATURES

- A variety of product line-up to meet your requirements Local indication, electric transmission, local flow integration, Integration with scaled pulse or alarm output including remote communication
- Detachable to piping with ISO(IDF) ferrules
- Easy to clean, suitable for sanitary services such as foods, beverages, cooking oil, brewing and fine chemicals
- Protection class of indicator is IP67
- Straight through from bottom to top flow direction
- Actual examples of measurement : Water, brine, juice, other liquids, foods, raw materials



MODEL CODE

Basic model		Material/Connection code						Function 1 code	Function 2 code etc	Basic model and Function 1 code may be indicated in the quotation.		
AM7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Specifications		
Flow direction	1									Bottom → Top		
Function of indicator	L									Local indication		
	E									Electric transmitter		
	H									Electric transmitter with HART communication		
	T									Local integration		
	R									Reed switch		
	N									Proximity switch		
Explosionproof	M									Microswitch		
	W									Dust tight, water immersion proof, non-explosionproof		
	E									Flameproof version		
Wetted material	S									Intrinsic safety version		
	- 0 2									Material of main body : SUS304	Material of float : SUS304	
	- 0 3									SUS316	SUS316	
	- 0 4									SUS316L	SUS316L	
Connection standard	- Z Z									Others		
	I D									ISO (IDF) Ferrule		
Kind of connector	Z Z									Others		
	C									Ferrule clamp		
Connection size	Z									Others		
	- 3									1S		
	- 4									1.5S		
	- 5									2S		
	- 6									2.5S		
	- 8									3S		
	- 9									3.5S		
	- A									4S		
	- B									4.5S		
- Z									Others			
Construction, finishing								/ S R		Sanitary (buff polished with #320 to #400)		
Additional function	Output function	/ E 1								Electric transmitter		
		/ E 2								Electric transmitter (Intrinsically safe)		
		/ H 1								Electric transmitter with HART communication		
		/ H 2								Electric transmitter with HART communication (Intrinsically safe)		
		/ T 1								Local integrator + Electric transmitter + Integrator with scaled pulse (or alarm)		
		/ T H								Local integrator + analog current output with HART communication+ Integrated pulse (or alarm)		
	Explosionproof type	/ R <input type="checkbox"/>									Reed switch	
		/ N <input type="checkbox"/>									Proximity switch	
		/ M <input type="checkbox"/>									Microswitch	
		/ J E									TIIS Flameproof version	
		/ K E									KOSHA Flameproof version	
		/ C E									NEPSI Flameproof version	
Cable entry	/ E E									ATEX Flameproof version		
	/ E E									IECEX Flameproof version (Specify separately)		
	/ J I									TIIS Intrinsically safe version		
	/ K I									KOSHA Intrinsically safe version		
	/ C I									NEPSI Intrinsically safe version		
	/ E I									ATEX Intrinsically safe version		
Option	/ M 2									M20×1.5 (F)		
	/ G 1									G1/2 (F)		
	/ G 2									G3/4 (F)		
	/ N 1									NPT1/2 (F)		
	/ N 2									NPT3/4 (F)		
	/ O L									Oil-free treatment		
Special specifications	/ W L									Water-free treatment		
	/ A P									Pickling treatment		
	/ P S									Special painting color		
	/ E P									Electrolytic polishing		
	/ L T									Airtight test		
	/ P C									Waterproof connector		
Double scales	/ F G									Flameproof cable gland		
	/ A C									Other accessories		
	/ W S									Double scales, output for main scale		
Others	/ W E									Double scales, output for main and sub-scales		
	/ Z Z									Contact us for details		

STANDARD SPECIFICATION

● FUNCTIONS

AM7 □□□	AM7 □□□ /E □	AM7 □□□ /H □	AM7 □□□ /T □	AM7 □□□ /R □ , /N □ , /M □
Local indication	Local indication Electric transmitter	Local indication Electric transmitter HART communication	Local indication Electric transmitter Local integration Pulse output Alarm output	Local indication Alarm output

● METER SIZE AND CONNECTION SIZE

Meter size	15	20		25		40		50		60		80		100		
Connection size	1S	1S	1.5S	1S	1.5S	1.5S	2S	2S	2.5S	2.5S	3S	3S	3.5S	4S	4S	4.5S

● CONNECTION STANDARD: ISO (IDF) Ferrule, Union screw is available on request.

● FLOW DIRECTION : Bottom to Top

● FLUID PRESSURE : Max. 0.68 MPa

● FLUID TEMPERATURE : -20 to 150°C

● SEAL : Silicone rubber

● MATERIALS OF METALLIC PARTS

: SUS304 , SUS316 , SUS316L

● WETTED PARTS : Buff polished with #320 to #400, Electrolytic polishing is available on request.

● INDICATION ACCURACY : ±1.5% F.S. as standard, ±1.0% F.S. available on request, consult us.

● SCALE LENGTH : 70 mm

● SCALE RANGE : 10 : 1

● PROTECTION CLASS OF INDICATOR

: Dust tight and water immersion proof IP67

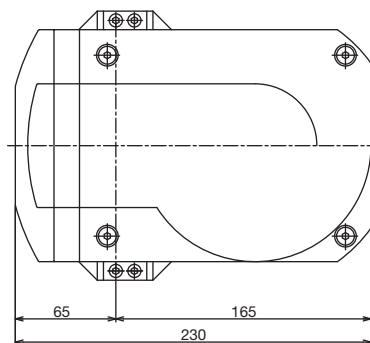
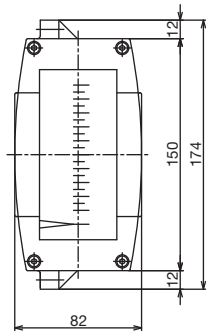
● PAINTING COLOR

Painted parts	Color	
Indicator	Jade green	(Munsell 7.5BG4/1.5)
Indicator cover, Transmitter	Light gray	(Munsell N7.5)

AM7□□□ (LOCAL INDICATION)

● AMBIENT TEMPERATURE -30 to 80°C

● Dimension of indicator



Approx. mass: 2.5kg



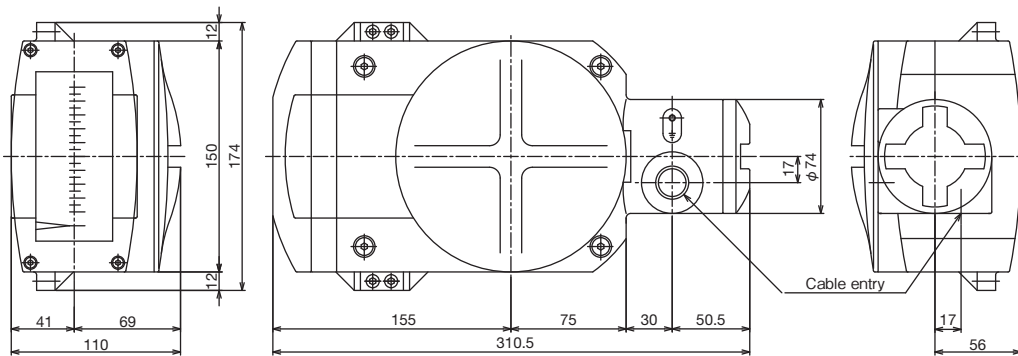
AM7□□□ /E□ (LOCAL INDICATOR WITH ELECTRIC TRANSMITTER)

AM7□□□ /E□ indicates flow rate by pointer and scale plate, and outputs electric (4 to 20mA DC) signal which is proportional to flow rate. In addition to the dust tight and water immersion proof type, the intrinsically safe and flame proof versions are available.

● SPECIFICATION OF TRANSMITTER

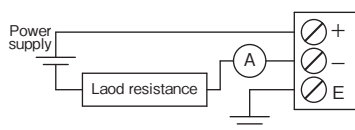
Power supply voltage	: 10 to 30V DC (Voltage between transmitter terminals)
	(For Intrinsically safe version : 10 to 28V DC/For TIIS/KOSHA Flameproof version: 12 to 30 VDC)
Current output	: 4 to 20mA DC
	(Effective output range : 4.0 to 21.6mA At abnormal condition, however, 22.8mA or 3.75mA as an option can be output.)
Allowable load resistance	: Less than 830Ω (580Ω or less / 24V DC)
	Determine the allowable load resistance for each supply voltage using following formula.
	Allowable load resistance \leq (Power supply voltage [V] - 10) / 0.024 [Ω]
	The allowable load resistance includes the one of circuit wiring.
Output accuracy	: $\pm 1.0\%$ F.S. (Against flow calibration)
Low cut off	: 0 to 20%F.S. (default 7%F.S.)
Damping	: 0 to 20s (default 1s)
Cable entry	: Weather proof 2-M20×1.5, 2-G1/2, 2-NPT1/2, Weather proof connector
	: Intrinsically safe & Flame proof 2-M20×1.5, 2-G1/2, 2-NPT1/2, Packing type cable gland
	Note : The packing type cable gland model SXC -16BY made by Shimada Electric Co. shall be used for the TIIS flame proof construction. The cable entry for the indicator is G1/2 only.
Construction	: Dust tight and water immersion proof IP67
	: Intrinsically safe Ex ia IIC T1 to T6 AM7□□□/E2□□ The temperature class of TIIS certified products is T6.
	: Flame proof Ex d IIC T1 to T6 AM7□□□/E1□E The temperature class is T4 for TIIS, KOSHA Certified products
Ambient temp.	: Dust tight and water immersion proof -20 to 70°C
	: Intrinsically safe -20 to 60°C Ex ia IIC T1 to T6
	: Flame proof -20 to 55°C Ex d IIC T4 (For TIIS, KOSHA Certified products)
	-20 to 60°C Ex d IIC T1 to T6 (For other certified products)
Insulation resistance	: 20 MΩ or more / 500V DC (between batch of power supply terminal and indicator case)
Withstand voltage	: 500V AC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 3.7kg

● TERMINAL AND WIRING



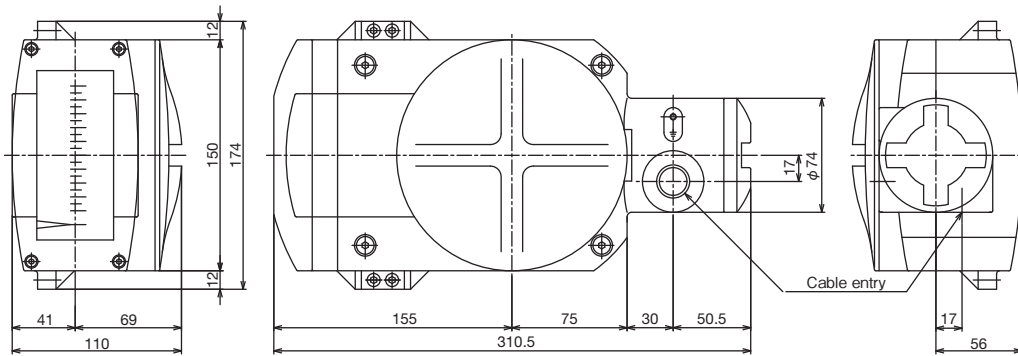
AM7□□□/H□ (LOCAL INDICATOR WITH ELECTRIC TRANSMITTER & HART COMMUNICATION)

AM7□□□/H□ indicates flow rate by pointer and scale plate, and outputs electric (4 to 20mA DC) signal equipped with HART Communication complying with Multi-drop. In addition to the dust tight and water immersion proof type, the intrinsically safe and flame proof versions are available.

● SPECIFICATION OF TRANSMITTER

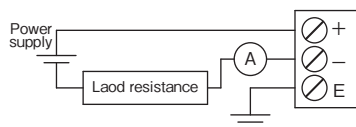
Power supply voltage	: 10 to 30V DC (Voltage between transmitter terminals) (For Intrinsically safe version: 10 to 28V DC/For TIIS/KOSHA Flameproof version: 12 to 30 VDC)
Current output	: 4 to 20mA DC (Effective output range : 4.0 to 21.6mA At abnormal condition, however, 22.8mA or 3.75mA as an option can be output.)
Allowable load resistance	: 230 to 830Ω (Not less than 230Ω load resistance is needed for “with HART communication.”) Determine the allowable load resistance for each supply voltage using following formula. Allowable load resistance \leq (Power supply voltage [V] -10) / 0.024 [Ω] The allowable load resistance includes the one of circuit wiring.
Output accuracy	: $\pm 1.0\%$ F.S. (Against flow calibration)
Low cut off	: 0 to 20%F.S. (default 7% F.S.)
Damping	: 0 to 20s (default 1s)
Cable entry	: Weather proof 2-M20×1.5, 2-G1/2, 2-NPT1/2, Weather proof connector : Intrinsically safe & Flame proof 2-M20×1.5, 2-G1/2, 2-NPT1/2, Packing type cable gland Note : The packing type cable gland model SXC -16BY made by Shimada Electric Co. shall be used for the TIIS flame proof construction. The cable entry for the indicator is G1/2 only.
Construction	: Dust tight and water immersion proof IP67 : Intrinsically safe Ex ia IIC T1 to T6 AM7□□□/H2/□ The temperature class of TIIS certified products is T6. : Flame proof Ex d II T1 to T6 AM7□□□/H1/□E The temperature class is T4 for TIIS, KOSHA Certified products
Ambient temp.	: Dust tight and water immersion proof -20 to 70°C : Intrinsically safe -20 to 60°C Ex ia IIC T1 to T6 : Flame proof -20 to 55°C Ex d IIC T4 (For TIIS, KOSHA Certified products) -20 to 60°C Ex d IIC T1 to T6 (For other certified products)
Insulation resistance	: 20 MΩ or more/500V DC (between batch of power supply terminal and indicator case)
Withstand voltage	: 500V AC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 3.7kg

● TERMINAL AND WIRING



AM7□□□/□ (LOCAL INDICATOR WITH LOCAL INTEGRATION, INTEGRATION PULSE, ELECTRIC TRANSMISSION AND HART COMMUNICATION)

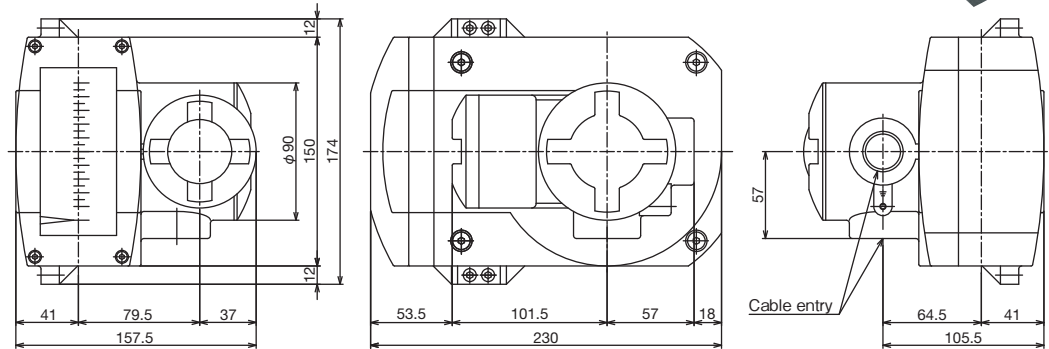
With local flow rate indication, AM7□□□/□ has the functions of local flow integration, integration pulse output, 4 to 20mA electric output and Hart communication. This series serves the custody of flow. The additional magnetic sensing switches to conventional push buttons are available for customers' convenience. In addition to the dust tight and water immersion proof type, the flame proof version is available.

● SPECIFICATION OF TRANSMITTER

- Integration : 6 digit red LCD (With 8 digit scaling and reset function)
- Count rate : Less than 10Hz (Less than 36000 c/h)
- Pulse or Alarm output : NPN Open collector 2 point select output (Pulse width : 30ms, 50ms, 100ms, 200ms, 500ms)
: 1 point alarm + pulse output, or 2 points alarm output
(Alarms are selectable from the flow rate or the integrated flow alarm.)
: Max. voltage 30V DC, max. current 50mA
(The power supply circuit and the output circuit are insulated.)
Reverse-connected protection, Residual voltage when turning it on more less 1.2V (10mA)
- Integration accuracy : ±1.0%F.S. (Against flow calibration)
- Power supply : 16 to 30V DC (Voltage between transmitter terminals)
- Current consumption : Less than 60mA
- Current output : 4 to 20mA DC
(Effective output range : 4.0 to 21.6mA At abnormal condition, however, 22.8mA or 3.75mA as an option can be output.)
- Allowable load resistance : Less than 830Ω (In case of HART communication version : 230 to 830Ω)
Determine the allowable load resistance for each supply voltage using following formula.
Allowable load resistance ≤ (Power supply voltage [V] - 10) / 0.024 [Ω]
The allowable load resistance includes the one of circuit wiring.
- Output accuracy : ±1.0%F.S.(Against flow calibration)
- Low cut off : 0 to 20%F.S. (default 7%F.S.)
- Damping : 0 to 20s (default 1s)
- Cable entry : 2-G3/4, 2-NPT3/4, Packing type cable gland
Note : The packing type cable gland model SXC -22BY made by Shimada Electric Co. shall be used for the TIIS flame proof construction. The cable entry for the indicator is G3/4 only.
- Construction : Dust tight and water immersion proof IP67
: Flame proof Ex d IIC T1 to T6 AM7□□□/□/□E
The temperature class is T4 for TIIS, KOSHA certified products
- Ambient temp. : Dust tight and water immersion proof -20 to 70°C
: Flame proof -20 to 55°C Ex d IIC T4 (For TIIS, KOSHA Certified products)
-20 to 60°C Ex d IIC T1 to T6 (For other Certified products)
- Insulation resistance : 20 MΩ or more/500V DC
(between batch of power supply terminal and indicator case)
- Withstand voltage : 500V AC/1min
(between batch of power supply terminal and indicator case)

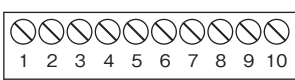


● DIMENSION OF INDICATOR/TRANSMITTER



Approx mass: 3.8kg

● TERMINAL AND WIRING



Terminal No.	1	2	3	4	5	6	7	8	9	10
Terminal wiring	DO1+	DO1-	DO2+	DO2-		R+	R-	PS+	PS-	FG

(Attention) DO: Contact output terminals, R: 4-20mA analog output terminals, PS: Power supply, FG: Grounding

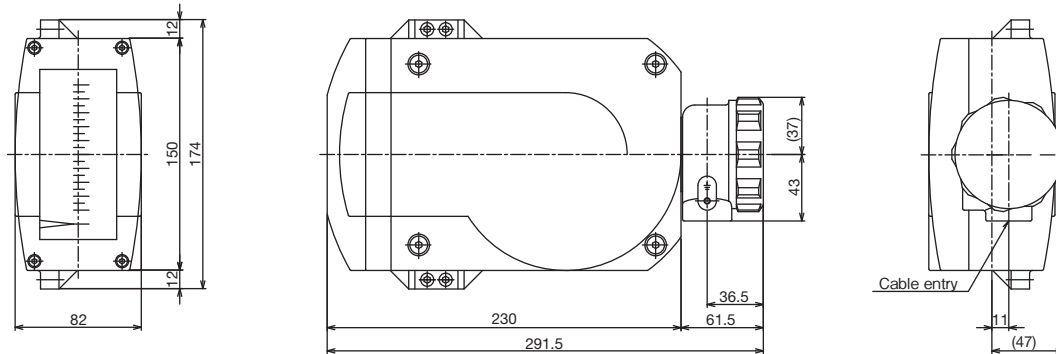
AM7□□□/R□ (LOCAL INDICATOR WITH REED SWITCH TYPE ALARM)

AM7□□□/R□ indicates flow rate by pointer and outputs SPST contact at set point for flow alarm.
 In addition to the dust tight and water immersion proof type, the intrinsically safe version is available.

● SPECIFICATION OF TRANSMITTER

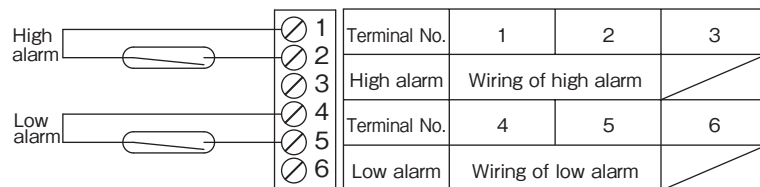
- Alarm point : 2 points (1 point high alarm, 1 point low alarm or 2 points high and low alarm)
- Switch : Self-holding reed switch (a or b contact)
- Rating : Reed switch (SPST) 10VA AC, 10W DC as resistance load
 Max. 125V AC/0.5A, Max. 100V DC/0.5A
- Setting accuracy : ±1.5% F.S. (Against flow calibration)
 Note: While switch is on, and if any other flow rate than the alarm setting value is indicated, it may result in causing wrong accuracy.
- Reset span : Less than 10% F.S. (Against flow calibration)
- Cable entry : G1/2 or NPT1/2 or others
- Enclosure : Dust tight and water immersion proof IP67
 : Intrinsically safe To be used in combination with the safety barrier provided by customers.
 See page 11 for details.
- Ambient temp. : -10 to 60°C (The intrinsically safe type is subject to the safety barrier.)
- Insulation resistance : 100 MΩ or more/500V DC (between batch of power supply terminal and indicator case)
- Withstand voltage : 1500V AC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 2.8kg

● TERMINAL AND WIRING



Note : Terminal No.4 and 5 are not used for 1 point high alarm. Likewise, terminal No. 1 and 2 are not used for 1 point low alarm.



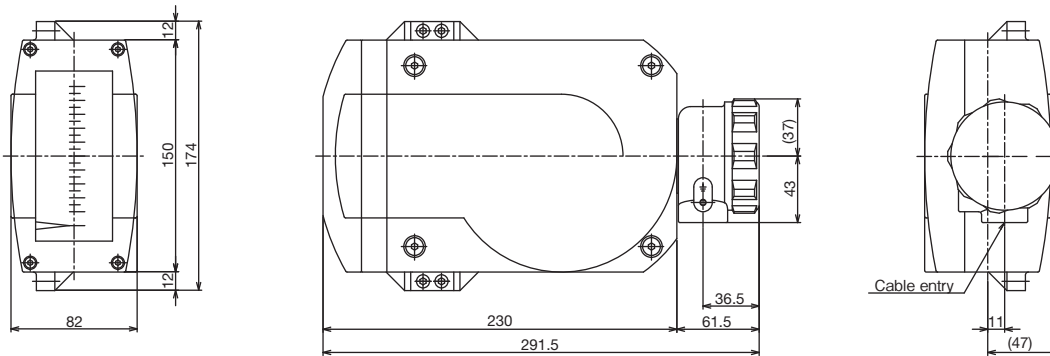
AM7□□□/N□ (LOCAL INDICATOR WITH PROXIMITY SWITCH TYPE ALARM)

With local flow rate indication, AM7□□□/N□ has a proximity switch which outputs alarm signals complying with NAMUR standard. In addition to the dust tight and water immersion proof type, the intrinsically safe version is available.

● SPECIFICATION OF TRANSMITTER

- Alarm point : 2 points (1 point high alarm, 1 point low alarm or 2 points high and low alarm)
- Switch : Proximity switch
- Power supply voltage : 8V DC
- Operating current : Proximity switch complying with NAMUR, ON :1mA or less, OFF : 3mA or more
- Setting accuracy : ±1.5% F.S. (Against flow calibration)
- Reset span : Less than 1.5% F.S. (Against flow calibration)
- Cable entry : G1/2 or NPT1/2 or others
- Enclosure : Dust tight and water immersion proof IP67
 - : Intrinsically safe To be used in combination with the safety barrier provided by customers.
 - See page 11 for details.
- Ambient temp. : Dust tight and water immersion proof -25 to 80°C
 - : Intrinsically safe -20 to 60°C TIIS-certified transmitter/Ex ia IIC T5
 - 20 to 50°C Other certified transmitter/Ex ia IIC T1...T6
 - (Ambient temperatures above are subject to the safety barrier.)
- Insulation resistance : 100 MΩ or more/500V DC (between batch of power supply terminal and indicator case)
- Withstand voltage : 500V DC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 2.8kg

● TERMINAL AND WIRING

1	Terminal No.	1	2	3
2	High alarm	+	-	
3	Terminal No.	4	5	6
4	Low alarm	+	-	
5				
6				

Note : Terminal No.4 and 5 are not used for 1 point high alarm. Likewise, terminal No. 1 and 2 are not used for 1 point low alarm.



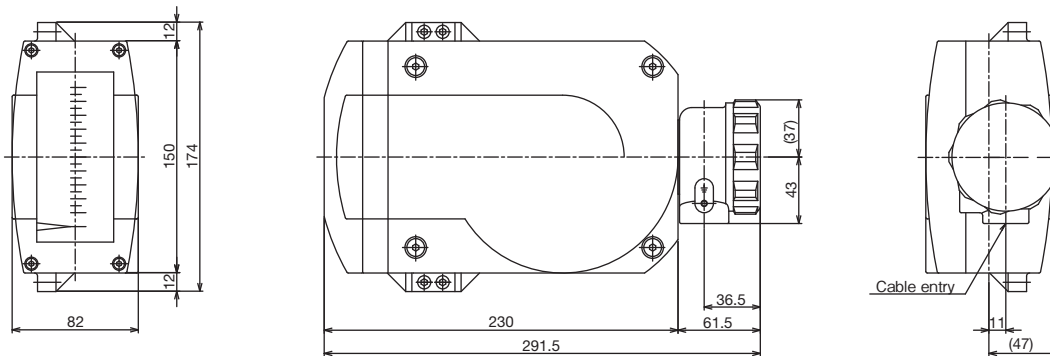
AM7□□□/M□ (LOCAL INDICATOR WITH MICRO SWITCH TYPE ALARM)

With local flow rate indication, AM7□□□/M□ has a micro switch which outputs SPDT alarm signals. In addition to the dust tight and water immersion proof type, the intrinsically safe version is available.

● SPECIFICATION OF TRANSMITTER

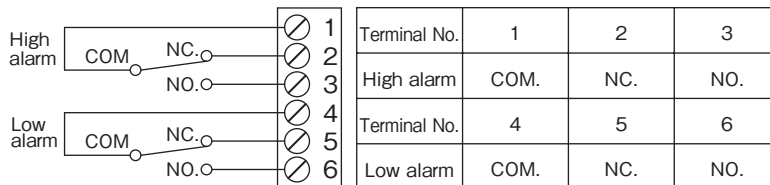
- Alarm point : 2 points (1 point high alarm, 1 point low alarm or 2 points high and low alarm)
- Switch : Micro switch (c contact)
- Rating : 250V AC/5A as resistance load
- Setting accuracy : ±1.5% F.S. (Against flow calibration)
 - Note: While switch is on, and if any other flow rate than the alarm setting value is indicated, it may result in causing wrong accuracy.
- Reset span : Less than 20% F.S. , less than 30% F.S. when 2 alarm contacts work simultaneously. (Against flow calibration)
- Cable entry : G1/2 or NPT1/2 or others
- Enclosure : Dust tight and water immersion proof IP67
 - : Intrinsically safe To be used in combination with the safety barrier provided by customers.
 - See page 11 for details.
- Ambient temp. : Dust tight and water immersion proof -25 to 80°C
 - : Intrinsically safe -20 to 60°C subject to the safety barrier.
- Insulation resistance : 100 MΩ or more/500V DC (between batch of power supply terminal and indicator case)
- Withstand voltage : 1500V AC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 2.8kg

● TERMINAL AND WIRING



Note : Terminal No.4, 5 ,6 are not used for 1 point high alarm. Likewise, terminal No. 1,2,3 are not used for 1 point low alarm.



AM7□□□/□□□□E (FLAME PROOF)

AM7000SR outputs an alarm signal by SPDT contacts by adding a micro switch to the local flow rate indicator.

● SPECIFICATION OF TRANSMITTER

Alarm point : 2 points (1 point high alarm, 1 point low alarm or 2 points high and low alarm)

Switch : Micro switch (c contact)

Rating : 125V AC/1A or 30V DC/1A

Setting accuracy : $\pm 1.5\%$ F.S. (Against flow calibration)

Note: While switch is on, and if any other flow rate than the alarm setting value is indicated, it may result in causing wrong accuracy.

Reset span : Less than 15% F.S. (Against flow calibration), less than 20% F.S. when 2 alarm contacts work simultaneously.

Cable entry : G1/2 or NPT1/2 or others

Enclosure : Dust tight and water immersion proof IP67

: Flameproof Ex d IIC T1 to T6

The temperature class of the model certified by TIIS is T4. See page 11 for details.

Ambient temp. : Dust tight and water immersion proof -25 to 80°C

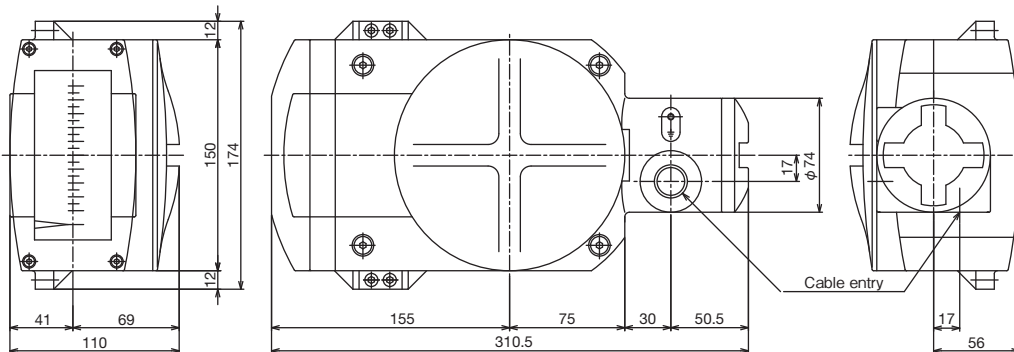
: Flameproof -20 to 55°C for the model certified by TIIS Ex d IIC T4

-20 to 60°C for the model certified by ATEX or IECEx Ex d IIC T1 to T6

Insulation resistance : 100 M Ω or more/500V DC (between batch of power supply terminal and indicator case)

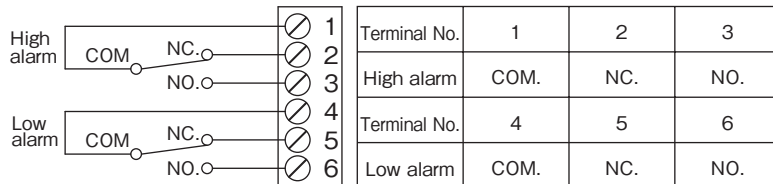
Withstand voltage : 1500V AC/1min (between batch of power supply terminal and indicator case)

● DIMENSION OF INDICATOR / TRANSMITTER



Approx. mass: 3.7kg

● TERMINAL AND WIRING



Note : Terminal No.4, 5, 6 are not used for 1 point high alarm. Likewise, terminal No. 1,2,3 are not used for 1 point low alarm.



AM7□□□/SR/□□/□E (FLAMEPROOF VERSION)

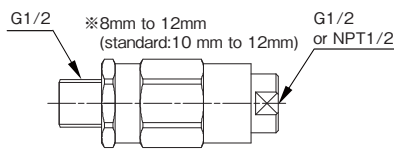
The flameproof model with electric or alarm output (microswitch) as an additionally specified feature, is available complying with the standard.

EX type	Class	Functions			
		Current transmission	Current Transmission HART communication	Local integration	Alarm output microswitch
TIIS	Ex d IIC T4	○	○	○	○
KOSHA	Ex d IIC T4	○	○	○	—
NEPSI	Ex d IIC T1 to T6 Gb	○	○	○	—
ATEX	II2G Ex d IIC T6... T1 Gb	○	○	○	○
IECEX	Ex d IIC T6... T1 Gb	○	○	○	○

NOTE) Be sure to use the cable gland shown in the figure below for the TIIS flameproof version (current transmission, current transmission HART communication, or local integration or alarm output).

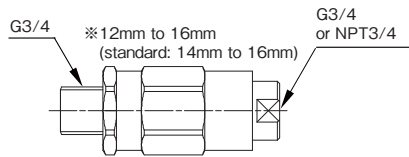
※Cable diameters applicable to cable glands included in the product.

For the current transmission, current transmission HART communication



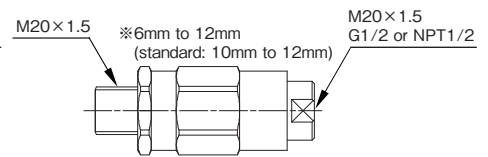
SXC-16BY By Simada Electric Co.

For the site integration



SXC-22 By Simada Electric Co.

For the alarm output



EXPC-16B By Simada Electric Co.

AM7□□□/SR/□□/□I (INTRINSICALLY SAFE VERSION)

Intrinsically safe modes complying with the standard are available depending on additionally specified features of the current transmission, or alarm output.

EX type	Class	Functions			
		Current transmission	Current Transmission HART communication	Local integration	Alarm output
TIIS	Ex ia IIC T6	○	○	—	(Note1)
	Ex ia IIC T5	—	—	—	(Note1)
KOSHA	Ex ia IIC T1 to T6	○	○	—	○
NEPSI	Ex ia IIC T1 to T6 Gb	○	○	—	○
ATEX	II2 G Ex ia IIC T1... T6 Gb	○	○	—	○

Note 1: The read switch type (AM7□□□/R□) and the micro switch type (AM7□□□/M□) are available only when the intrinsically safe relay barrier is used.

The temperature class of the TIIS intrinsically safe proximity switch type (AM7□□□/N□) is T5. Consult us for details.

● INTRINSICALLY SAFE SPECIFICATION OF CURRENT TRANSMISSION

	Current transmission (AM7□□□/SR/E2/□I)
Max.voltage for intrinsically safe circuit	28V DC
Max.current for intrinsically safe circuit	93mA
Max.power consumption for intrinsically safe circuit	650mW
Capacitance inside intrinsically safe circuit	5nF
Inductance inside intrinsically safe circuit	0.2mH

● INTRINSICALLY SAFE SPECIFICATION OF ALARM OUTPUT

	Read switch AM7□□□/SR/R□/□I	Proximity switch AM7□□□/SR/N□/□I		Micro switch AM7□□□/SR/M□/□I
		TIIS intrinsically safe product	Other products	
Max.voltage for intrinsically safe circuit	30V DC	10.5V DC	16V DC	30V DC
Max.current for intrinsically safe circuit	500mA	13mA	25mA	500mA
Max.power consumption for intrinsically safe circuit	—	34mW	64mW	—
Capacitance inside intrinsically safe circuit	—	150nF	150nF	—
Inductance inside intrinsically safe circuit	—	150μH	150μH	—
Recommended relay barrier	EB3C (IDEC)	KFD2-SR2-Ex1.W (P&F) (Note 2)		EB3C (IDEC)

Note: 2 The TIIS intrinsically safe proximity switch has been certified in combination with barriers made by PEPPERL+FUCHS. Be sure to use intrinsically safe proximity switches with the barriers shown below. For other proximity switches, use the explosion-proof barriers conforming to the rated values above.

TIIS intrinsically safe barrier

For 1ch:KFD2-SR2-Ex1.W

For 2ch:KFD2-SR2-Ex2.W

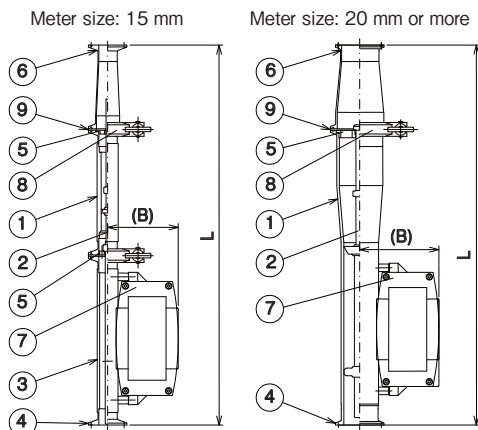
DIMENSIONS AND FLOW RATE TABLE

● AM71□□/SR

(Flow direction: Bottom—Top)

(Sanitary type)

For liquid



■ Table 1

Figures in () is the flow rate of water (density: 1.0 g/cm³, viscosity: 1.0 mPa·s).

Meter size	Flow rate (m ³ /h)	Pressure loss (kPa)	Conn size	Size (mm)		Mass (approx.)
				L	(B)	
15	0.1~0.47	5	1S	500	93	4
20	1.6(1.7)	7.5	1S	500	94	4
			1.5S			
25	4(4.2)	9.5	1S	500	97	5
			1.5S			
40	7.1(10)	9	1.5S	500	104	6
			2S			
50	15	7.5	2S	500	110	7
			2.5S			
	(20)	11	2S	550	110	8
			2.5S			
65	27.5(32)	10	2.5S	550	119	10
			3S			
80	40.5	10.5	3S	550	125	12
			3.5S			
			4S			
100	70	11	4S	550	138	20
			4.5S			

■ Table 2

No	Description	Class 2	Class 3	Class 4	Remarks
1	Tapered tube	SUS304	SUS316	SUS316L	With #320 to #400 buff polishing (inner and outer)
2	Float ass'y	SUS304/SCS16	SUS316/SCS16	SUS316L/SCS16	With #320 to #400 buff polishing
3	Lower body	SUS304	SUS316	SUS316L	With #320 to #400 buff polishing (inner and outer)
4	Ferrule	SUS304	SUS316	SUS316L	With #320 to #400 buff polishing (inner and outer)
5	Float guide	SUS304	SUS316	SUS316L	With #320 to #400 buff polishing
6	Reducer	A240 304	A240 316L	A240 316L	With #320 to #400 buff polishing (inner and outer)
7	Indicator	ADC12	ADC12	ADC12	
8	Clamp	SCS13	SCS13	SCS13	
9	Gasket	Silicone rubber NBR FPM PTFE	Silicone rubber NBR FPM PTFE	Silicone rubber NBR FPM PTFE	Standard material Silicone rubber

* SUS316L may be used instead of SUS304 and SUS316 due to production circumstances.

* JIS materials may be used instead of ASTM for reducers due to production circumstances.

* Electrolytic polishing is available as an option.

SELECTION OF FLOWMETER

1. Liquid application

a. Selection of meter size

Maximum possible flow rate each meter size is shown in dimension tables. These figures are based on water flow (Density 1.0g/cm³ and Viscosity 1.0MPa·s). If actual fluid condition is different from such figures, a conversion calculation is required as following formula:

$$Q_w = Q \times 2.59 \sqrt{(7.7/\rho)^{-1}}$$

Q_w : Water converted flow rate (m³/h)

Q : Flow rate of actual fluid (m³/h)

ρ : Density of actual fluid (g/cm³)

Example Fluid: Alcohol Density: 0.8g/cm³

Flow rate: 16m³/h Flowmeter to be used: AM71□□

$$Q_w = 16 \times 2.59 \sqrt{(7.7/0.8)^{-1}}$$

$$= 16 \times 0.882$$

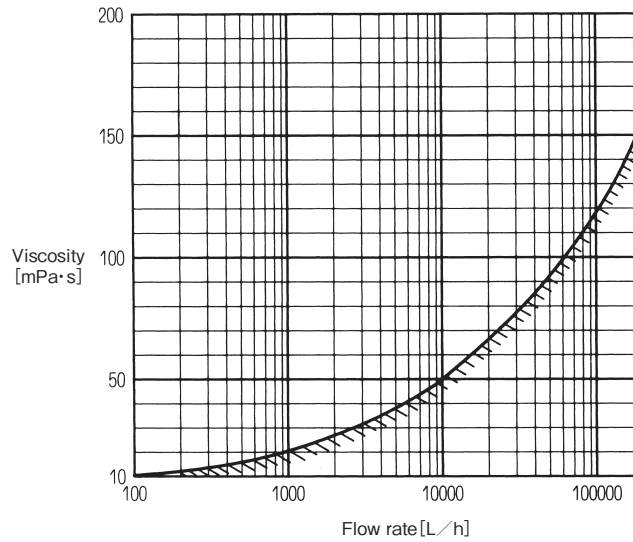
$$= 14.1 \text{ (m}^3\text{/h)}$$

Referring to table 1, the required meter size is 50. Either the connection size 2S or 2.5S can be used.

b. Viscosity limit

In case the Viscosity of fluid is more than 1mPa·s, confirm the suitability in the graph below. Trace viscosity and flow rate and confirm the crossing point is below the curve. If the crossing point is above the curve, consult factory for detailed calculation by computer.

● Viscosity curve

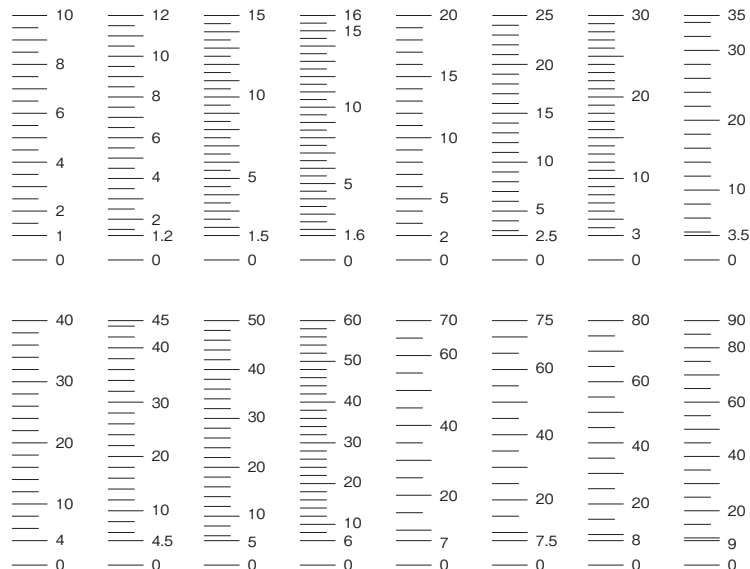


2. Scale graduation

Customer can select any one of the following 16 standard scale graduations covering the maximum scale range.

Range ability is 10 : 1

● Standard scale graduation



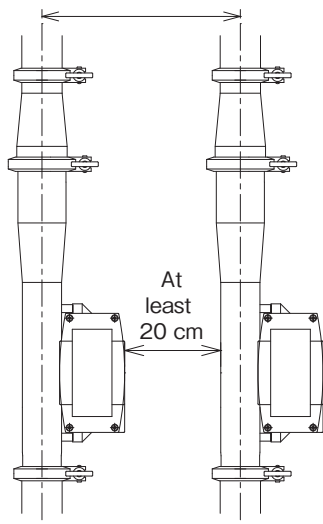
CAUTIONS

- This flowmeter transmits the displacement caused by the magnet coupling. A surrounding magnetic field might affect its performance.
- Avoid installation near magnetic fields. Magnetic materials including insulation covers may also affect its performance; do not bring them within 20 cm from the flowmeter.
- When installing two or more flowmeters, place them at least the distances shown in figures below apart from each other to avoid mutual interference.

For maintenance, ensure a clearance of at least 20 cm between the indicator of one flowmeter and the body of other flowmeters.

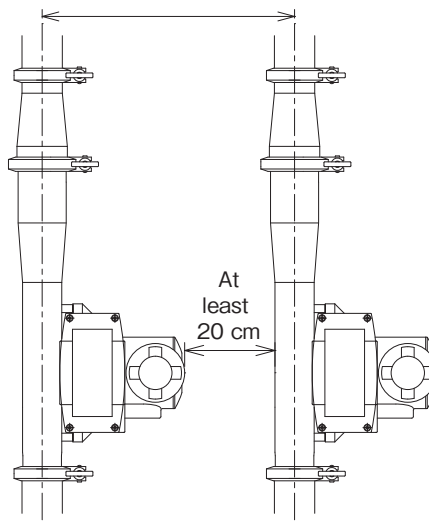
Local indication and alarm output (flameproof) type
Electric transmitter type

Meter size 50 or less : Min. 35 cm
Meter size 65 or more : Min. 45 cm



Local integration type

Meter size 50 or less : Min. 40 cm
Meter size 65 or more : Min. 50 cm



* Specification is subject to change without notice.

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