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Variable Area Flowmeter
RF3600

Max. Working Pressure: 4.0MPa & 1.6MPa

Accuracy: Standard ±2.5%

Ingress Protection IP65

-40°C to 250°C

Product Datasheet

Rocksensor is one of the global leaders specializing in Process Instrumentation, Research and Development, and Designing of Industrial Automation Equipment. We provide highly precise pressure sensors and transmitters, flow metres, level transmitters, and temperature transmitters with a prime focus to help our clients efficiently, safely, and economically run complex industrial processes.

Rocksensor, headquartered in Switzerland has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, Morocco, China, Taiwan, Australia, UAE, Brazil, and India. Our clients come from some of the major industries such as Oil and Gas, Petrochemicals, Pharmaceuticals, FMCG, Automobiles, Water, Cement, Metal & Mining, and mainly from the Power Industry like Nuclear, Thermal, Hydro, and Solar.

Rocksensor deals in a wide range of highly accurate industrial automation instruments ensuring that even the complex industrial processes happen efficiently.

To fulfill the needs of our clients we make sure that our instruments work in even the harsh environmental conditions offering accurate recordings and communication.

We, at Rocksensor, believe in creating bonds that last a lifetime and create a success story for each and every client. Rocksensor aims to achieve a perfect fit in the global market landscape and establish our footprints across the globe.

CONTENTS

1.Introduction

RF3600 Series Metal tube rotameter is a variable area flow meter which is based on the float position measurement. With full-metal structure, it has the features of small size, low pressure loss, large range ratio (10~20:1), optional transmitter with HART communication function, and convenient installation & maintenance etc. It is widely used in flow measurement and process control of small flow, low flow rate, and various industries under complex and harsh environments.

Working Principle:

The flow meter consists of a measuring tube and a float inside it. The flow pushes the float to an equilibrium point. The area obtained between the float and the tube is proportional to the flow rate.

The point of equilibrium depends on:

● E = Force of the fluid flow

● Ff = Weight of the float

● Al = Free area of flow

where:

Al= A0 (calibrated orifice area) - Af (float area)
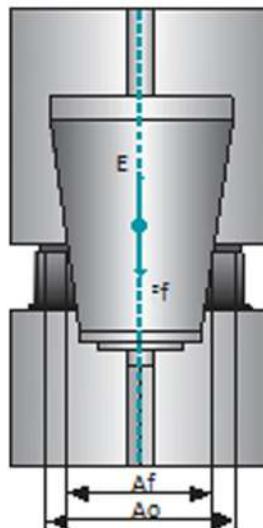
Variable Area Flowmeter

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2.Salient Features

• Robust all-metal structure design.

• Suitable for gas and liquid measurement in various industries.

• Cone-shape measuring tube design, which has wide measuring range and good linearity.

• Wetted parts material are optional: SS304 SS316L,FEP, Hastelloy C,Titanium.

• Adopt advanced magnetic coupling system design, improve the accuracy and stability.

• The upper row displays the instantaneous flow, the lower row displays the total flow.

Instantaneous flow	0.000~99999
Total flow	0.00~99999999
Current range	3.80~21.00mA
Instantaneous flow percentage	0~100%
Pointer angle	0.00~90.00°
Ambient temperature	-40~+150℃
Total flow small signal cutoff	0~10%
Damping time setting range	0~10 seconds

Note: Various flow units are optional, the range is automatically converted when unit is changed.

• For the digital LCD display type, the flow range of the instantaneous flow can be corrected on- site based on the different measuring medium.

• It adopts advanced six level data backup technology, data of total flow can be saved automatically when power-off, (the total flow sending period is 0.3S).

• Besides AC/DC power supply, it supports battery power supply function.

• No need to open the cover, it can be operated by a magnetic pen; the key operation function is also available.

• Through the HART protocol, you can use the handheld operator or host computer software to perform partial or full configuration operations on the flowmeter.

3. Technical Parameters

|	
Measuring Range	16~150000 l/h water (20℃); 0.5~4000 m3/h gas (0.1013 MPa 20℃)
Turn down ratio	10:1 (Special type 20:1)
Accuracy Level	±2.5% (Special type 1.5% or 1.0%)
Working Pressure	DN15～DN50 1.6 MPa; DN80～DN150 1.0 MPa (Special type 1.6 MPa) Jacket pressure: 1.6 MPa
Medium Temperature	Standard: -80℃～+220℃ (Digital display with 4~20 mA) High temperature: 300℃ (Mechanical with Indicator) FEP liner type ≤90℃
Ambient Temperature	-20℃～+100℃ (remote type without LCD display ≤85℃) (remote type with LCD display ≤70℃)

Medium Viscosity	DN15: ≤30 mPa.s; DN25: ≤250 mPa.s; DN50～DN150: ≤300 mPa.s
LCD	Instantaneous flow numerical range: 0.000～99999 Total flow numerical range: 0.00～99999999
Signal output	Standard signal: Two-wire 4~20 mA (HART optional) Standard signal :Three-wire 0~10 mA Pulse
Communication	RS485, HART
Alarm signal	Two relay outputs (Limits 125VAC/0.25A); One or two proximity switches; Pulse output:0~1KHz, Isolated output (Output Level Vpp >4.5V)
Power supply	Standard: 24 VDC±20%; Customized: 220 VAC (85~265 VAC); Battery powered: 3.7@4.4~5.2 AH Lithium Battery, 12～36 months.
Connection	Flange (DIN, ANSI, JIS); Tri-clamp; Thread (BSP, NPT)
Protection grade	IP65 / IP67
Ex-proof mark	Flame-proof : Exd IIC T4~T6 Gb Intrinsically Safe Explosion Proof: Ex ia IIC T3～T6
Wetted parts	SS304 SS316L, FEP, Hastelloy C, Titanium

4. Dimension Drawings

Standard Type: Dimensions and Weight
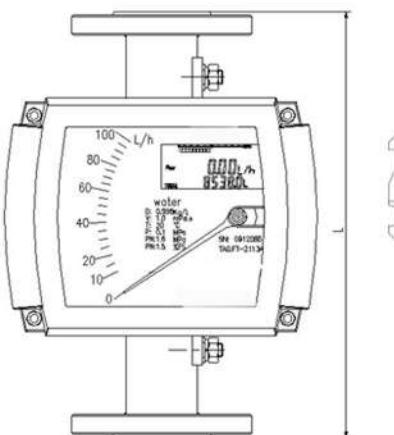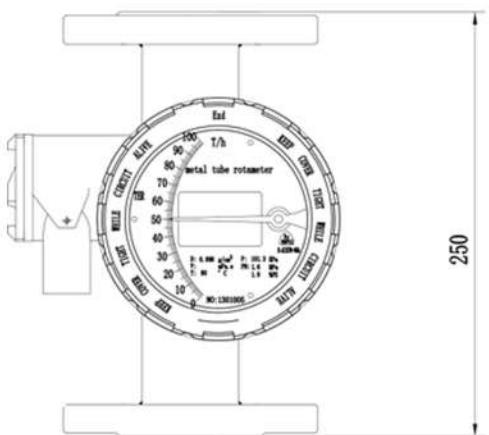

Square Converter   **Round Converter**

Caliber	L (mm)	Weight (Kg)
DN15	250	5.0
DN25	250	6.5
DN50	250	10
DN80	250	15.5
DN100	250	17
DN150	250	35

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Jacket Type: Dimensions and Weight

Insulation Jacket Type
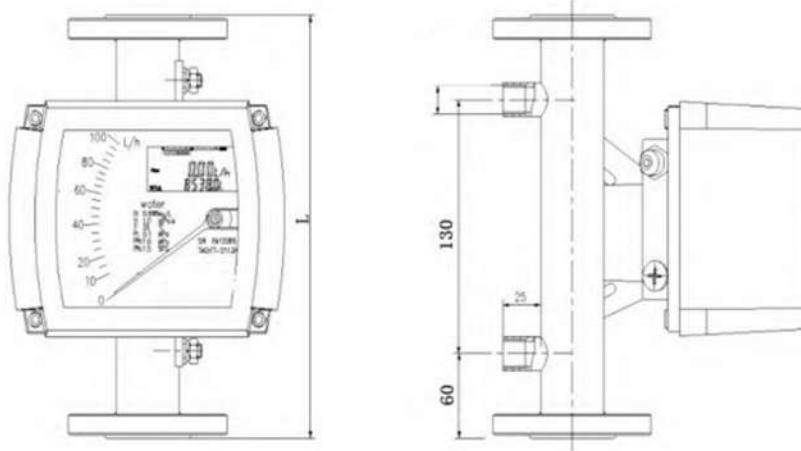
Caliber	L (mm)	Weight (Kg)
DN15	250	7.5
DN25	250	10
DN50	250	13
DN80	250	19
DN100	250	21
DN150	250	38

FEP Liner Type: Dimensions and Weight

Square Converter   **Round Converter**
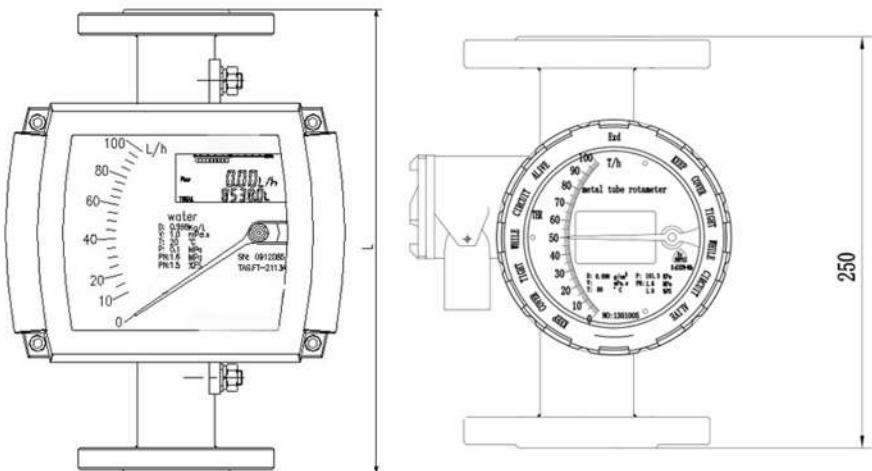
Caliber	L (mm)	Weight (Kg)
DN15	250	5.0
DN25	250	6.5
DN50	250	10
DN80	250	15.5
DN100	250	16.5
DN150	250	32

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Vertical Outlet Type: *Dimensions and Weight*
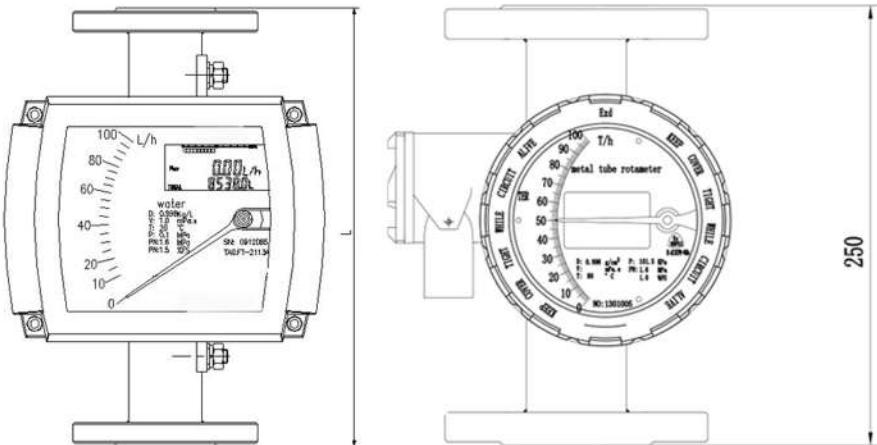
Round Converter

Caliber	L (mm)	Weight (Kg)
DN15	250	5.0
DN25	250	6.5
DN50	250	10
DN80	250	15.5
DN100	250	17
DN150	250	35

Side Outlet Type: *Dimensions,Weight and Pressure Loss*
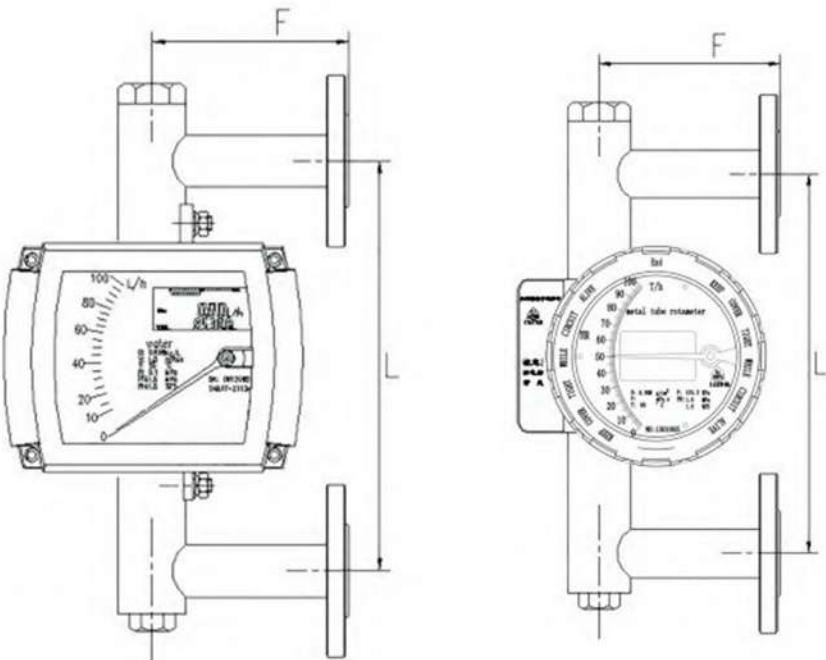
Caliber	DN15	DN25
F (mm)	120	120
L (mm)	250	250
Weight (kg)	6	7.2
Pressure loss (kPa)	21	30

(DN15～DN25)

DN32~DN150 drawing can be provided on request

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Bottom Inlet and Side Outlet Type: *Dimensions and Weight*
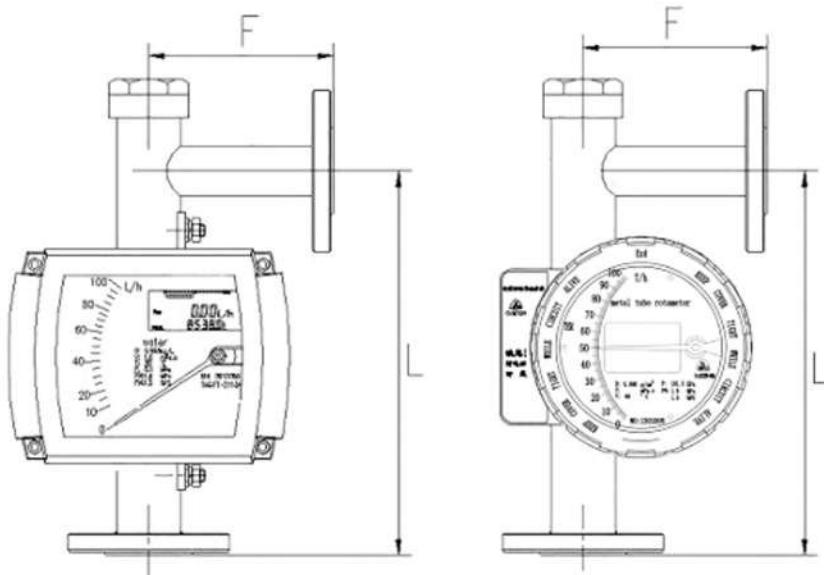
Caliber	DN15	DN25
F (mm)	250	5.0
L (mm)	250	6.5
H (mm)	250	10
Weight (kg)	250	15.5
Pressure Loss (kPa)	250	17

(DN15～DN25)

DN32~DN150 drawing can be provided on request

Horizontal Mounting Type: *Dimensions,Weight and Pressure Loss*
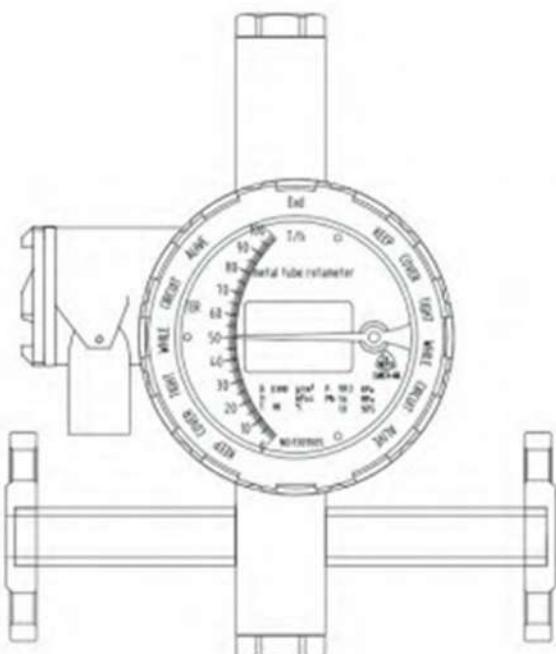
Caliber	L (mm)
DN15	250
DN20	250
DN25	250
DN40	300
DN50	300
DN65	400
DN80	400
DN100	400
DN125	500
DN150	500

(DN15～DN150 Gas)

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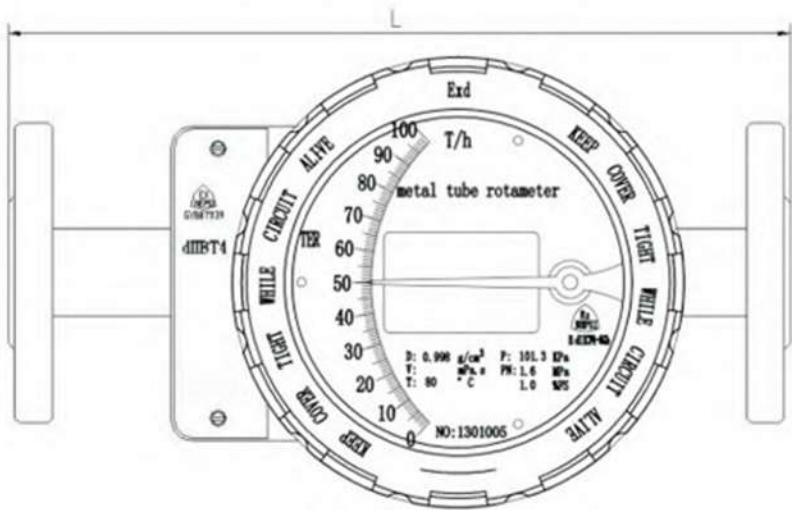
Caliber	L (mm)
DN15	250
DN20	250
DN25	250
DN40	250
DN50	250
DN65	250
DN80	250
DN100	250
DN125	250
DN150	250

(DN15～DN150 liquid)

Additional Structure and Installation Instructions
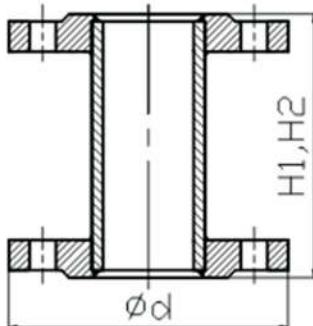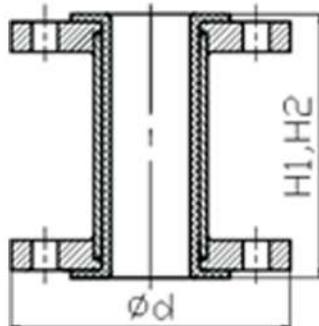
| Straight Pipe Type | Liner FEP Straight Pipe Type | Liner FEP with Filter | With Filter |
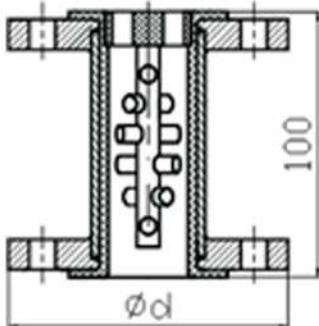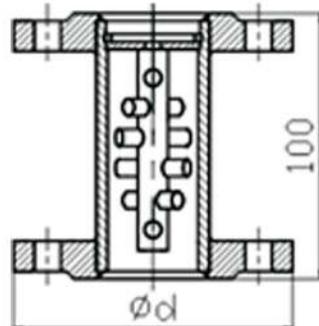
Diameter	DN15	DN25	DN50	DN80	DN100	DN150
Front straight pipe H1≥(mm)	75	125	250	400	500	750
After straight pipe H2≥(mm)	250	250	250	250	250	250
φd (mm)	95	115	165	200	220	285

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5. Installation Drawings

h1: Outlet straight pipe
h2: Inlet straight pipe, 5D
h3: Magnetic Filter

bottom to side

side to side

h1

vertical

h2

h3

bottom to side

side to side

valve

horizontal

flow direction

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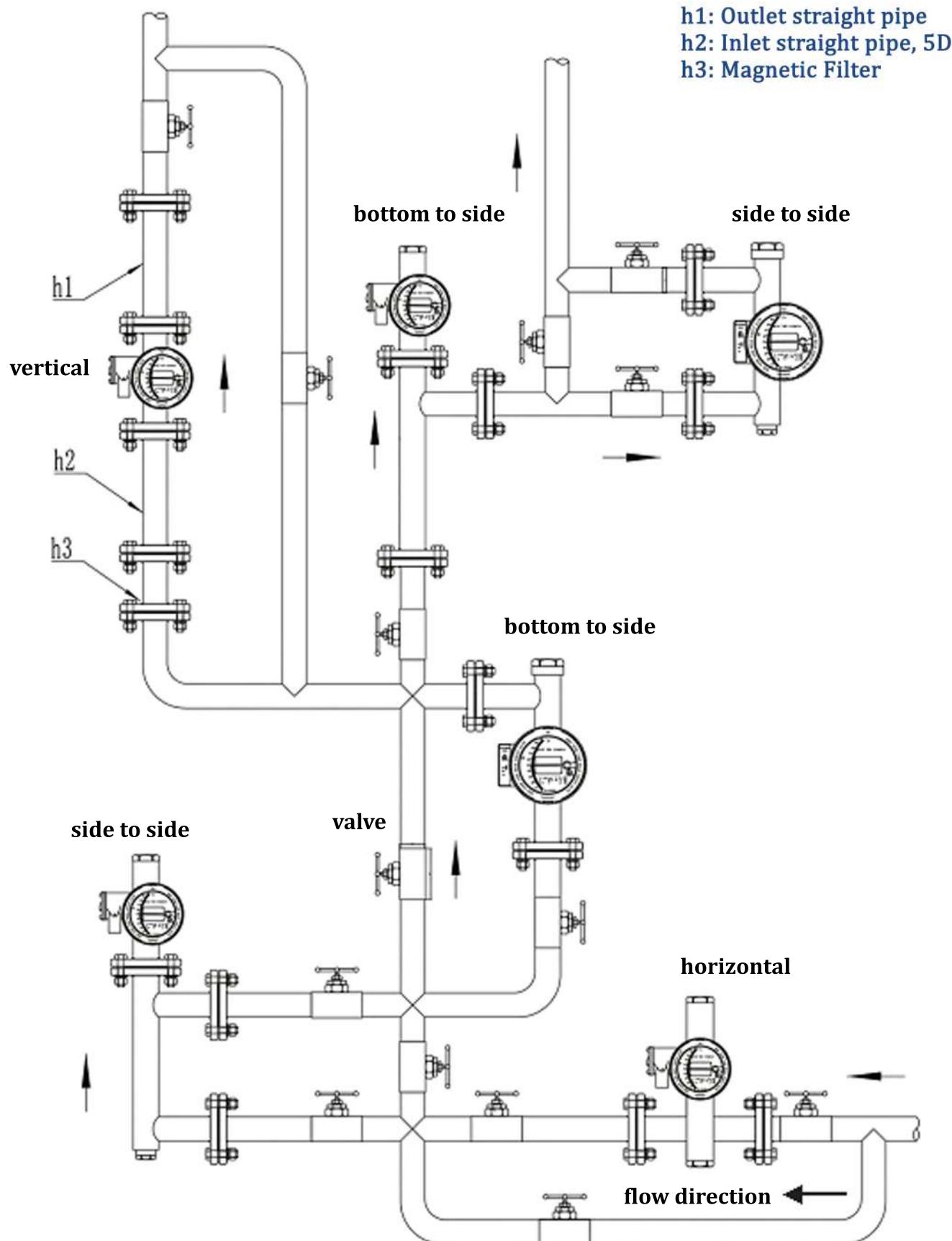
6. Flow Range Table

DN (mm)	Work Number	Flow Range		
		Water l/h		Air m³/h
		Normal Type	Ex-Proof Type	
15		2.5~25	-	0.07~0.7
	1B	4.0~40	2.5~25	0.11~1.1
	1C	6.3~63	4.0~40	0.18~1.8
	1D	10~100	6.3~63	0.28~2.8
	1E	16~160	10~100	0.48~4.8
	1F	25~250	16~160	0.7~7.0
	1G	40~400	25~250	1.0~10
	1H	63~630	40~400	1.6~16
25	2A	100~1000	63~630	3.0~30
	2B	160~1600	100~1000	4.5~45
	2C	250~2500	160~1600	7.0~70
	2D	400~4000	250~2500	11~110
40	4A	500~5000	300~3000	12~120
	4B	600~6000	350~3500	16~160
50	5A	630~6300	400~4000	18~180
	5B	1000~10000	630~6300	25~250
	5C	1600~16000	1000~10000	40~400
80	8A	2500~25000	1600~16000	60~600
	8B	4000~40000	2500~25000	80~800
100	10A	6300~63000	4000~40000	100~1000
150	15A	20000~100000	-	600~3000

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7. Model Selection Table

RF3600	Variable Area Flowmeter											
Code	1	2	3	4	5	6	7	8	9	10	11	12

10	Size
	DN15-DN150 (1/2"～6"）

20	Indicator
M	Mechanical
D	Digital LCD

30	Installation
V	Vertical
H	Horizontal

40	Installation
BT	Bottom-top
TB	Top-bottom
LR	Left-right (horizontal)
RL	Right-left (horizontal)
SS	Side-side
BS	Bottom-side

50	Accuracy
A25	±2.5%
A15	±1.5%

60	Wetted Parts
R4	SS304
R6L	SS316L
F	Liner PTFE
HC	Hastelloy C
S4F	SS304 lined FEP
Ti	Titanium

120	Additional Structure
ASN	None
AD	Damp
AJ	Jacket

110	Ex-Proof
EN	None
Exd	Flame-proof (Ex d IIC T4~T6 Gb)
Exia	Intrinsic safe (Ex ia IIC T3~T6)

100	Alarm
AN	None
H	High
L	Low
HL	High+Low

90	Process Connection	
DXX	Flange	D10: DIN PN10, D16: DIN PN16, D25: DIN PN25, D40: DIN PN40
AXX		A15: ANSI 150#, A30: ANSI 300#
TC	Tri-clamp	
T	Thread	

80	Installation
SN	None
C	4~20mA
R	RS485
H	HART
P	Pulse

70	Power Supply
DC	24VDC
BC	220VDC
BA	3.6 V lithium battery

Example: RF3600-50DVBTA25R4DCCA15ANENASN

50-Size : 50 mm
D-Indicator : Digital LCD display
V-Installation : Vertical
BT-Structure : Bottom-top
A25-Accuracy : +/-2.5%
R4-Wetted Parts : SS304
DC-Power Supply : 24 VDC   AN-Alarm : None
C-Signal Output : 4-20 mA   EN-Ex-proof : None
A15-Process Connection : ANSI 150#   ASN-Additional Structure : None

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Sensing Beyond the Vision

Field Instrumentation Range

Pressure Measurement
- Smart Differential Pressure Transmitter
- Smart Gauge Pressure Transmitter
- Smart Absolute PressureTransmitter
- Miniature Pressure Transducer without display
- Sanitary Gauge/ Absolute Pressure Transmitter

- Submersible Pressure Transmitter
- Remote Seal Differential P.T. with capillary
- Remote Seal Differential P.T. Direct Mount
- Remote Seal Gauge/Absolute P.T. with capillary
- Remote Seal Gauge/Absolute P.T. Direct Mount

Flow Measurement
- Coriolis Mass Flowmeter
- Thermal Gas Mass Flowmeter
- Positive Displacement Flowmeter
- Electromagnetic Flowmeter
- Vortex Flowmeter

- Turbine Flowmeter
- Variable Area Flowmeter
- Clamp On Ultrasonic Flowmeter
- Inline Ultrasonic Flowmeter
- Portable Ultrasonic Flowmeter

Level Measurement
- RADAR Level Transmitter Horn Antenna
- Compact RADAR Level Transmitter
- RADAR Level Transmitter Sanitary
- RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- RADAR Level Transmitter Lens Antenna

- RADAR Level Transmitter Rod Antenna
- Ultrasonic Level Transmitter
- Microwave Barrier Level Switch
- Admittance Level Switch Series
- Vibrating Rod Level Switch Series
- Tuning Fork Level Switch Series

Temperature Measurement
- Head Mount Temperature Transmitter
- Temperature Transmitter for Sanitary Applications

- DIN Rail Temperature Transmitter
- Field Mount Temperature Transmitter

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