

RVAF10 Series Variable Area Flowmeters



1. Overview

RVAF10 Series flowmeters for measurement of the volumetric or mass flow rate of liquids and gases is an all-metal flowmeter that operates on the float measuring principle. The flow-dependent vertical position of the float in the measuring tube is transmitted by a magnetic coupling system to the scale in the indicator part. The flowmeter is installed in a vertical pipe run, with flow from bottom to top. Owing to its rugged design, the RVAF10 Series variable-area flowmeter is particularly suitable for difficult applications and environmental conditions.

2. Feature

- Unique measuring tube and magnetic coupling structure
- Full series of installation and various power supply
- The indicator has a dual indication system
- Convenient and scientific lead interface
- A variety of indicator forms
- Advanced self-damping indicator
- Increase geomagnetic compensation
- Powerful software functions
- Superior anti-interference performance
- Conveniently connected optoelectronic isolated output

3. Specification

| | |
|-----------------------------------|---|
| Measuring ranges (100% values) | Water@20°C, 1 to 200000L/h Air@20°C, 1.013bar, 0.03 to 3000m ³ /h |
| Range ratio | Standard 10:1, Special 20:1 |
| Accuracy | Standard +/-1.5%, Special +/-2.0% |
| Operation pressure | Standard: DN15 to DN50 ≤ 40bar, DN80 to DN200 ≤ 16Bar Special: DN15 to DN50 ≤ 320bar, DN80 to DN200 ≤ 160Bar |
| Connection | Flanges, Sanitary clamp, Thread, Sanitary thread, other connection consult with us. |
| Jacket connection | DN15, DIN PN16 flange, other connection consult with us. |

| | |
|-----------------------|---|
| Operation Temperature | -20°C to 450°C, -80°C to -20°C 0°C to 80°C (PTFE Lining) |
| Ambient temperature | -40°C to +85°C (remote) , -40°C to +100°C (local) , -30°C to +60°C (Exia, Exd) |
| Cable entry | M20 x1.5 (M5, M6, M10 indicators) M16x1.5 (M7, M8, M9 indicators) |
| Power supply | Standard :24VDC or 100 to 240VAC@50Hz/60Hz 4 to 20 mA:12 to 32VDC Alarm: 24VDC Ni-MH Battery 3.6V@9AH (3 years) |
| Loading | 600Ω(RLmax), 500Ω(Exia) |
| Alarm output | Upper and lower limit instant flow alarm, Optocoupler isolates Darlington output (internal power supply 24VDC, max. current 8mA, external internal power supply 200mA @ 30VDC Local alarm: upper, lower limit or upper and lower limit instant flow alarm, reed switch valve alarm (contact capacity 1A @ 30VDC), optional normally open and normally closed upper limit and lower limit alarm, maximum 60% range, min. 10% range of upper and lower limit alarm interval. |
| Pulse output | Optocoupler isolates Darlington output as cumulative pulse output (internal power supply 24VDC, max. current 8mA) |
| Type of protection | IP 67, NEMA 4X |
| Explosion Proof | Exia II CT4, Exd II BT3-6 Gb |
| Fluid Viscosity | DN15: $\eta < 5\text{mPa}\cdot\text{s}$ (S15.0 to S15.3) $\eta < 30\text{mPa}\cdot\text{s}$ (S15.4 to S15.10) DN25: $\eta < 250\text{mPa}\cdot\text{s}$ DN50 to DN200: $\eta < 300\text{mPa}\cdot\text{s}$ For special viscosity fluid, please consult with us. |

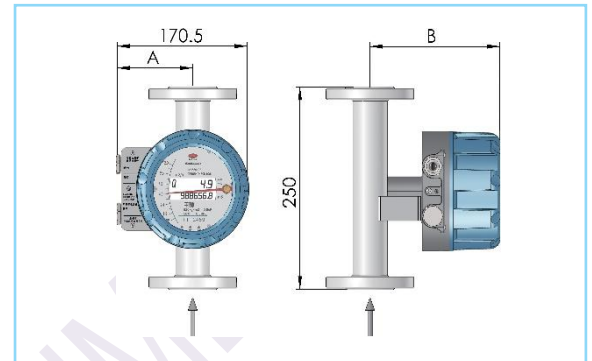
4. Dimension, weight and Pressure drop

4.1 10 series

a. Dimension, weight and pressure drop of 10 series standard M5 flowmeter

| Size | Dimension, weight and pressure drop of 10 series standard M5 flowmeter | | | | |
|-------|--|----------|-----------|-----------|----------------|
| | A | B | | Weight/kg | $\Delta P/kPa$ |
| | | Standard | High Tem. | | |
| DN15 | 108 | 154 | 194 | 3.7 | 16 |
| DN25 | 99 | 173 | 213 | 5.6 | 16 |
| DN50 | 84 | 173 | 213 | 9.7 | 7 |
| DN80 | 71 | 173 | 213 | 15.1 | 15 |
| DN100 | 61 | 213 | 273 | 17 | 22 |
| DN150 | 42 | 213 | 273 | 33.7 | 60 |
| DN200 | 12 | 213 | 273 | 48.7 | 70 |

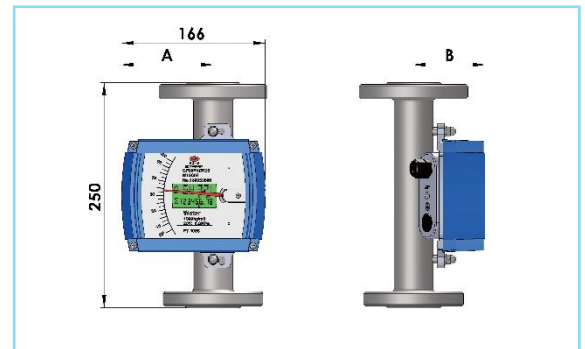
Remarks : ΔP is pressure drop (kPa)



b. Dimension, weight and pressure drop of 10 series standard M10 flowmeter

| Size | Dimension, weight and pressure drop of 10 series standard M10 flowmeter | | | | |
|-------|---|----------|-----------|-----------|----------------|
| | A | B | | Weight/kg | $\Delta P/kPa$ |
| | | Standard | High Tem. | | |
| DN15 | 106 | 74 | 154 | 3.4 | 14 |
| DN25 | 106 | 83 | 163 | 5.3 | 10 |
| DN50 | 106 | 98 | 178 | 9.4 | 12 |
| DN80 | 116 | 111 | 191 | 14.8 | 16 |
| DN100 | 116 | 121 | 201 | 16.7 | 25 |
| DN150 | 116 | 140 | 220 | 33.4 | 60 |
| DN200 | 116 | 170 | 250 | 48.4 | 70 |

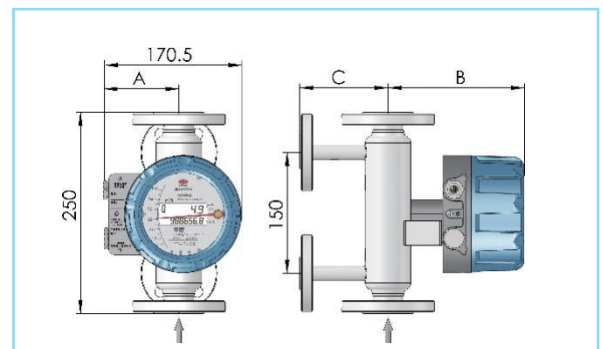
Remarks : ΔP is pressure drop (kPa)



c. Dimension, weight and pressure drop of 10 series jacket M5 flowmeter

| Size | Dimension, weight and pressure drop of 10 series jacket M5 flowmeter | | | | |
|-------|--|-----|-----|-----------|----------------|
| | A | B | C | Weight/kg | $\Delta P/kPa$ |
| DN15 | 102 | 154 | 100 | 6.5 | 16 |
| DN25 | 93 | 173 | 110 | 10.5 | 16 |
| DN50 | 77 | 173 | 120 | 12.5 | 7 |
| DN80 | 65 | 173 | 140 | 20 | 15 |
| DN100 | 52 | 213 | 150 | 21 | 22 |
| DN150 | 12 | 213 | 185 | 26 | 60 |
| DN200 | 12 | 213 | 210 | 30 | 70 |

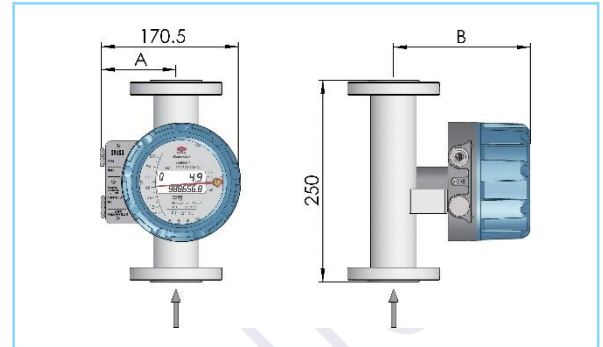
Remarks : ΔP is pressure drop (kPa)



d. Dimension, weight and pressure drop of 10 series PTFE M5 flowmeter

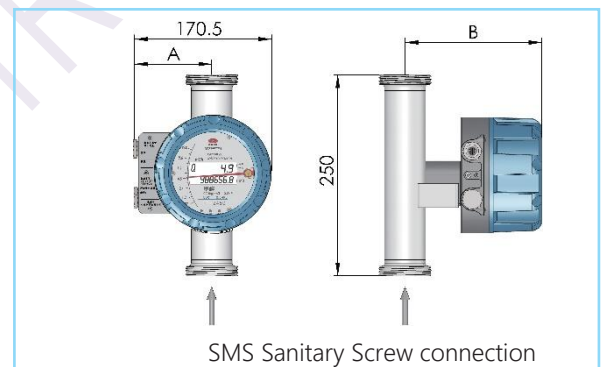
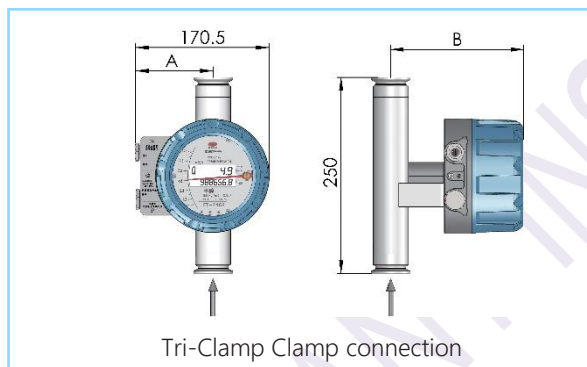
| Size | Dimension, weight and pressure drop of 10 series PTFE M5 flowmeter | | | |
|-------|--|-----|-----------|----------------|
| | A | B | Weight/kg | $\Delta P/kPa$ |
| DN15 | 103 | 154 | 4 | 16 |
| DN25 | 93 | 173 | 5.5 | 16 |
| DN50 | 77 | 173 | 9 | 7 |
| DN80 | 65 | 173 | 16 | 15 |
| DN100 | 52 | 213 | 17.5 | 22 |

Remarks : ΔP Remarks : ΔP is pressure drop (kPa)



4.2 15 series

a. Dimension, weight and pressure drop of 15 series sanitary M5 flowmeter

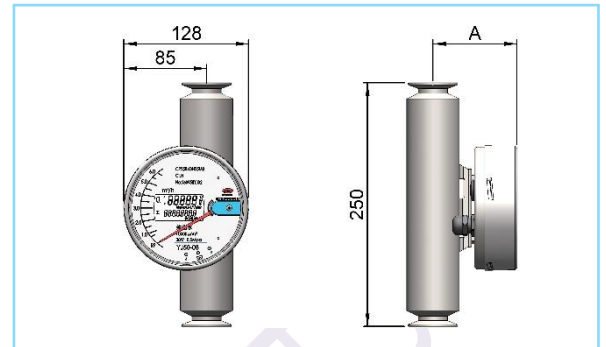


| Size | Dimension, weight and pressure drop of 15 series sanitary M5 flowmeter | | | |
|-------|--|-----|-----------|----------------|
| | A | B | Weight/kg | $\Delta P/kPa$ |
| DN15 | 109 | 154 | 2.4 | 16 |
| DN25 | 101 | 173 | 3.5 | 16 |
| DN50 | 84 | 173 | 5.3 | 7 |
| DN80 | 71 | 173 | 7.3 | 15 |
| DN100 | 61 | 213 | 8.1 | 22 |

Remarks : Other screw connections are available

b. Dimension, weight and pressure drop of 15 series sanitary M8 flowmeter

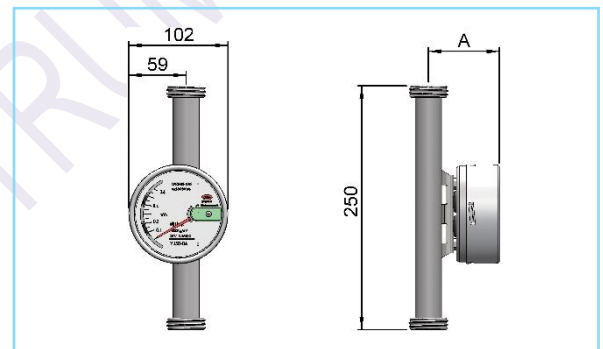
| Size | Dimension, weight and pressure drop of 15 series sanitary M8 flowmeter | | |
|-------|--|-----------|----------------|
| | A | Weight/kg | $\Delta P/kPa$ |
| DN15 | 75 | 1.6 | 16 |
| DN25 | 88 | 2.7 | 16 |
| DN32 | 88 | 2.7 | 16 |
| DN40 | 88 | 2.7 | 16 |
| DN50 | 100 | 4.5 | 7 |
| DN80 | 112 | 6.5 | 15 |
| DN100 | 122 | 7.3 | 22 |



Remarks : ΔP is pressure drop (kPa)

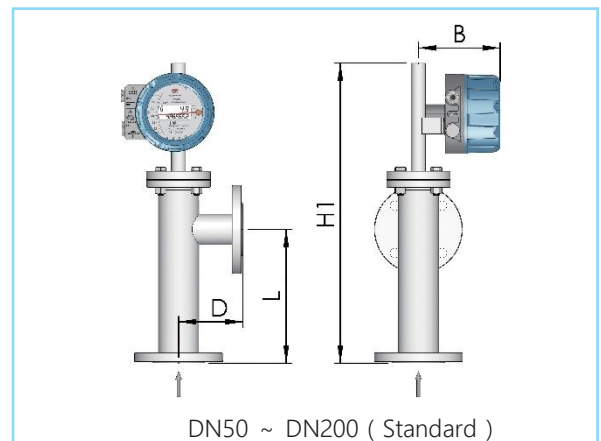
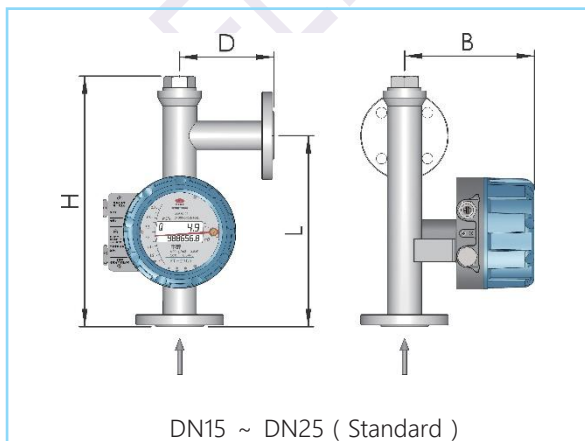
c. Dimension, weight and pressure drop of 15 series sanitary M9 flowmeter

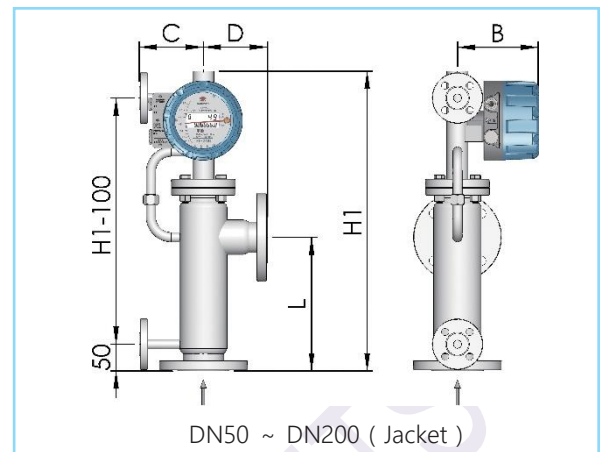
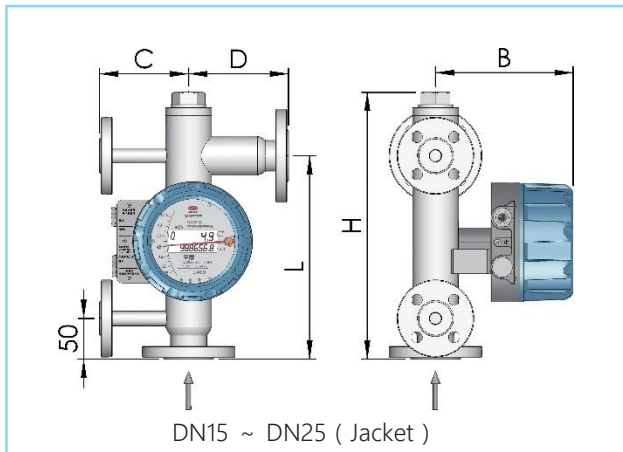
| Size | Dimension, weight and pressure drop of 15 series sanitary M9 flowmeter | | |
|------|--|-----------|----------------|
| | A | Weight/kg | $\Delta P/kPa$ |
| DN15 | 74 | 1.5 | 16 |
| DN25 | 86 | 2.6 | 16 |
| DN32 | 86 | 2.6 | 16 |
| DN40 | 86 | 2.6 | 16 |
| DN50 | 99 | 4.4 | 7 |



Remarks : ΔP is pressure drop (kPa)

4.3 Dimension, weight and pressure drop of 11 jacket M5 flowmeter

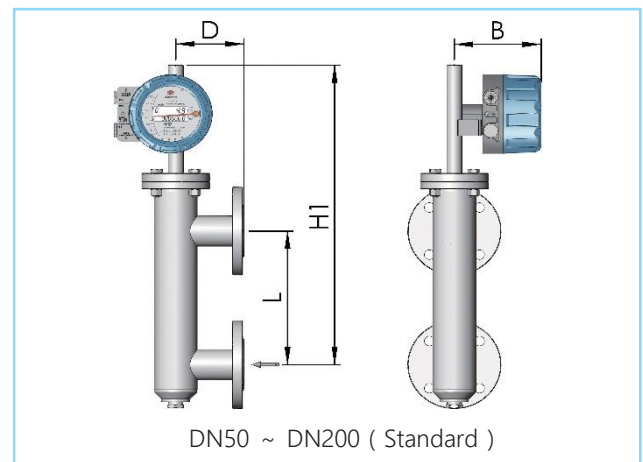
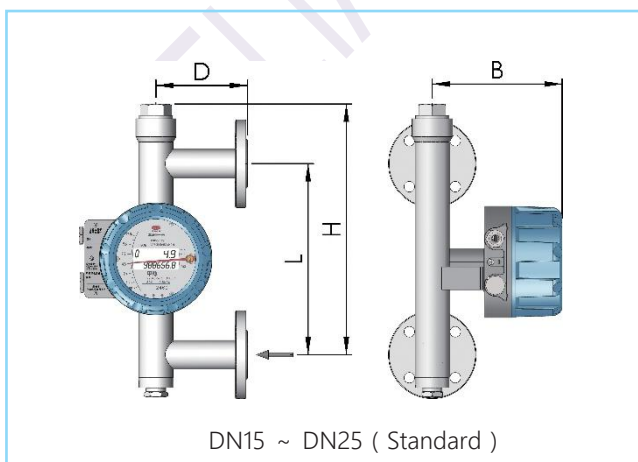




| Size | Dimension, weight and pressure drop of 11 jacket M5 flowmeter | | | | | | | | | |
|-------|---|-----------|-----|-----|-----|-----|-----|-----------|--------|----------------|
| | B | | C | D | H | H1 | L | Weight/kg | | $\Delta P/kPa$ |
| | Standar d | High tem. | | | | | | Standar | Jacket | |
| DN15 | 154 | 194 | 100 | 120 | 330 | | 250 | 7 | 8.6 | 20 |
| DN25 | 173 | 194 | 110 | 120 | 340 | | 250 | 8 | 10 | 20 |
| DN50 | 173 | 194 | 120 | 120 | | 560 | 250 | 15 | 17.5 | 11 |
| DN80 | 173 | 194 | 140 | 150 | | 575 | 250 | 25 | 28 | 19 |
| DN100 | 173 | 194 | 150 | 150 | | 590 | 250 | 29 | 32.5 | 26 |
| DN150 | 173 | 194 | 185 | 180 | | 690 | 300 | 53 | 57 | 58 |
| DN200 | 173 | 194 | 210 | 200 | | 780 | 350 | 61 | 66 | 80 |

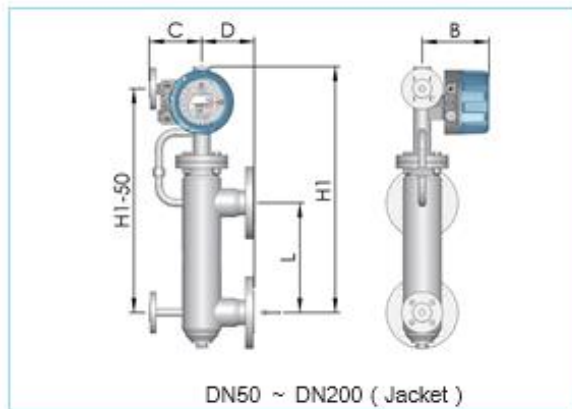
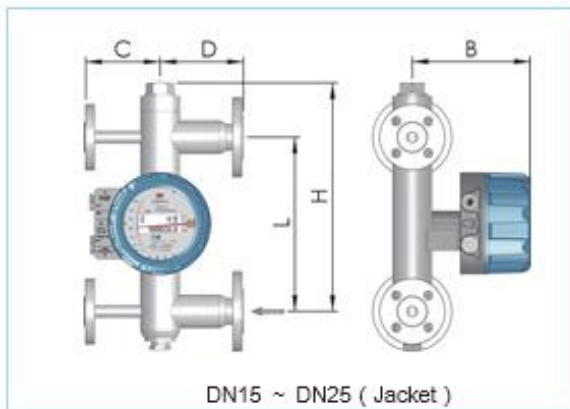
Remarks : ΔP is pressure drop (kPa)

4.4 Dimension, weight and pressure drop of 12 jacket M5 flowmeter



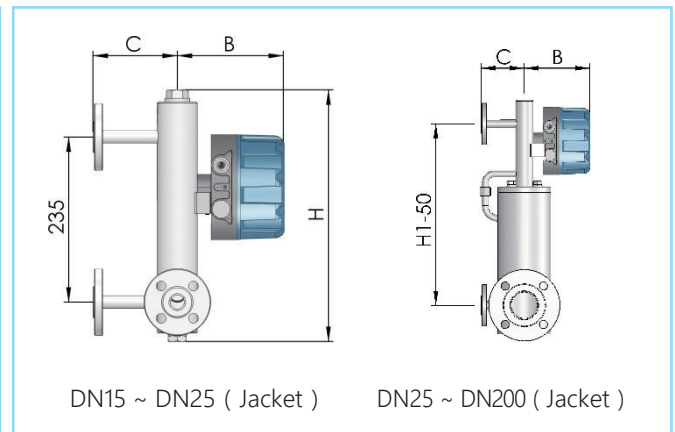
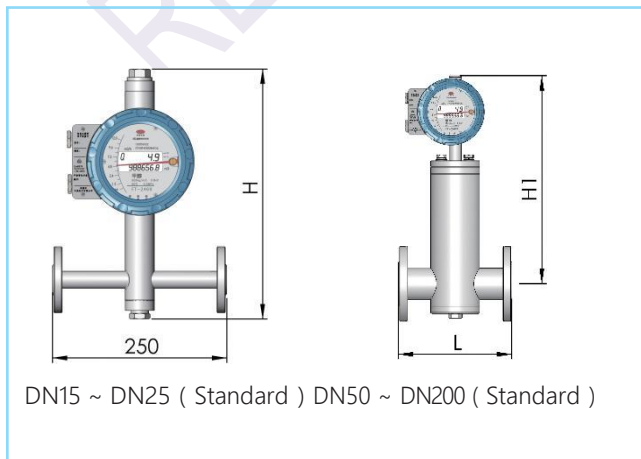
| Size | Dimension, weight and pressure drop of 12 jacket M5 flowmeter | | | | | | | | | |
|-------|---|-----------|-----|-----|-----|-----|-----|-----------|--------|----------------|
| | B | | C | D | H | H1 | L | Weight/kg | | $\Delta P/kPa$ |
| | Standard | High tem. | | | | | | Standard | Jacket | |
| DN15 | 155 | 195 | 100 | 120 | 330 | | 250 | 7.2 | 9 | 26 |
| DN25 | 173 | 195 | 100 | 120 | 340 | | 250 | 8.7 | 11.5 | 26 |
| DN50 | 173 | 195 | 120 | 120 | | 560 | 250 | 16.6 | 19 | 17 |
| DN80 | 173 | 195 | 140 | 150 | | 575 | 250 | 28.2 | 32.5 | 25 |
| DN100 | 173 | 195 | 150 | 150 | | 590 | 250 | 33.5 | 39.8 | 32 |
| DN150 | 173 | 195 | 185 | 180 | | 690 | 300 | 58 | 63.4 | 58 |
| DN200 | 173 | 195 | 210 | 200 | | 780 | 350 | 68 | 74 | 80 |

Remarks : ΔP is pressure drop (kPa)



4.5 Dimension, weight and pressure drop of 13R/L series jacket M5 flowmeter

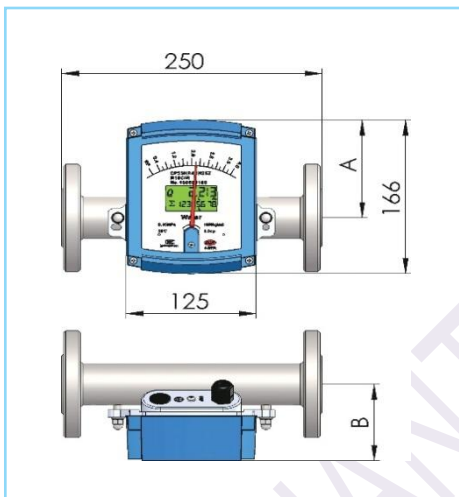
a. Dimension, weight and pressure drop of 13R/L series M5 flowmeter



| Size | Dimension, weight and pressure drop of 13R/L M5 flowmeter | | | | | | | | | |
|-------|---|-----------|-----|-----|-----|-----|-----|-----------|--------|----------------|
| | B | | C | D | H | H1 | L | Weight/kg | | $\Delta P/kPa$ |
| | Standard | High tem. | | | | | | Standard | Jacket | |
| DN15 | 155 | 195 | 100 | 120 | 355 | | 250 | 7.5 | 9.7 | 32 |
| DN25 | 173 | 195 | 100 | 120 | 370 | | 250 | 9 | 12 | 32 |
| DN50 | 173 | 195 | 150 | 120 | | 560 | 250 | 18 | 20 | 23 |
| DN80 | 173 | 195 | 190 | 150 | | 590 | 400 | 29 | 34 | 31 |
| DN100 | 173 | 195 | 210 | 150 | | 610 | 400 | 35 | 41.7 | 38 |
| DN150 | 173 | 195 | 238 | 180 | | 650 | 500 | 60 | 66.5 | 62 |
| DN200 | 173 | 195 | 290 | 200 | | 800 | 550 | 72.4 | 82.5 | 85 |

Remarks : ΔP is pressure drop (kPa)

b. Dimension, weight and pressure drop of 13H series M10 flowmeter



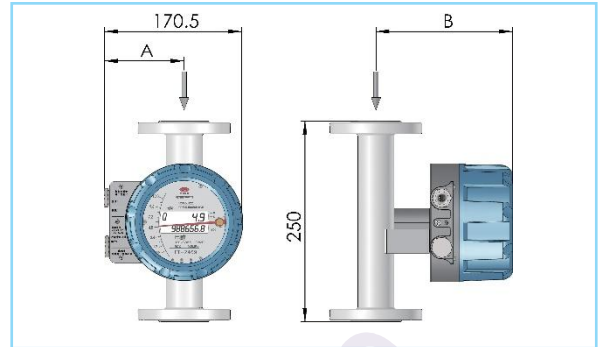
| Size | Dimension, weight and pressure drop of 13H series M10 flowmeter | | | | |
|-------|---|----------|-----------|-----------|----------------|
| | A | B | | Weight/kg | $\Delta P/kPa$ |
| | | Standard | High tem. | | |
| DN15 | 106 | 74 | 154 | 3.4 | 59 |
| DN25 | 106 | 83 | 163 | 5.3 | 24 |
| DN50 | 106 | 98 | 178 | 9.4 | 42 |
| DN80 | 116 | 111 | 191 | 14.8 | 32 |
| DN100 | 116 | 121 | 201 | 16.7 | 30 |
| DN150 | 116 | 140 | 220 | 33.4 | 60 |
| DN200 | 116 | 170 | 250 | 48.4 | 70 |

Remarks : ΔP is pressure drop (kPa)

4.6 Dimension, weight and pressure drop of 14 series M5 flowmeter

| Size | Dimension, weight and pressure drop of 14 series M5 flowmeter | | | | |
|-------|---|----------|-----------|-----------|----------------|
| | A | B | | Weight/kg | $\Delta P/kPa$ |
| | | Standard | High tem. | | |
| DN15 | 108 | 154 | 194 | 3.7 | 50 |
| DN25 | 99 | 173 | 213 | 5.4 | 19.5 |
| DN50 | 84 | 173 | 213 | 9.5 | 40 |
| DN80 | 71 | 173 | 213 | 14.8 | 29 |
| DN100 | 61 | 213 | 273 | 16.6 | 38 |
| DN150 | 42 | 213 | 273 | 33.7 | 60 |
| DN200 | 12 | 213 | 273 | 48.7 | 70 |

Remarks : ΔP is pressure drop (kPa)



5 Model Selection Guide

| | | | |
|----------------------|-------------------------|--|--------------------------|
| RVAF10 Series | | | |
| RVAF1 A B C D E | | Example: RVAF10R4DN25ZM5CLNIH | |
| RVAF1 | Variable Area Flowmeter | | |
| RVAF10 (Standard) | Measuring tube A | | |
| | 0 | Bottom - Top (Standard) | |
| | 1 | Bottom - Top Side (RP can't be used for wetting material) | |
| | 2 | Bottom Side - Top Side (RP can't be used for wetting material) | |
| | 3R | Right - Left (RP can't be used for wetting material) | |
| | 3L | Left - Right (RP can't be used for wetting material) | |
| | 3H | Horizontal spring type (material of spring is SS316 , $T \leq 200^{\circ}C$) | |
| | 4 | Top - Bottom (material of spring is SS316 , $T \leq 200^{\circ}C$) | |
| | 5 | Sanitary (RP can't be used for wetting material) (Remark clamp or thread connection) | |
| R4 (Standard) | Wetting material B | | Special wetting material |
| | R4 | 304 | R1 321 |
| | RL | 316L | Hb Hastelloy B2 |
| | RP | PTFE | Other |
| | Ti | Titanium alloy | |
| | Hc | Hastelloy C4 | |
| | Size C | | |

| | |
|-----------------------------|---|
| Nonstandard size in bracket | DN15、(DN20)、DN25、(DN32)、(DN40)、DN50、(DN65)、DN80、DN100、(DN125)、DN150、DN200 |
| | Appended structure D |
| N | No |
| T | Jacket (DIN PN16) |
| Z | Damp (Gas) |
| G | High Tem. (120°Cto 450°C) |
| L | Low Tem. (-80°Cto -20°C) |
| Y | High Pre. (DN15-DN50 Max. 32MPa、 DN80-DN200 最大Max. 16MPa) |
| | Indicator E Next page |

| | | | |
|--------------|---|----|---------------------------------------|
| Indicator E | | | |
| M5 | Full function indicator, cast aluminum round shell | | |
| M6 | Same with M5 , Stainless steel machined round shell | | |
| M7 | Same with M8 , Stainless steel machined round shell | | |
| M8 | Stainless steel stamping round shell (φ125) | | |
| M9 | Stainless steel stamping round shell (φ100) | | |
| M10 | Cast aluminum shell | | |
| Power supply | | | |
| J | Local indicator , no power supply , Reed tube alarm output can be used for M5 | | |
| A | 100VAC to 240VAC 50Hzto60Hz power supply ,(4 to 20)mA output , alarm、 pulse、 batch processing output (M5&M6 indicator only) | | |
| B | Battery powered , field liquid crystal display , no signal output , no backlight , no alarm (M5&M10 indicator only) | | |
| C | 24VDC two-wire supply ,(4 to 20)mA output | | |
| D | 24VDC three or four-wire power supply ,(4 to 20)mA output , alarm、 pulse、 batch processing output (except M9 indicator) | | |
| Display | | | |
| L | With liquid crystal display | | |
| X | Without liquid crystal display | | |
| Alarm | | | |
| N | No | K1 | Reed tube local single point alarm |
| K | Upper and lower alarm, pulse, batch output | K2 | Reed tube local upper and lower alarm |
| Protection | | | |

| | |
|------------------------|--|
| N | Ordinary, non-explosion proof |
| I | Exia II CT4 Ga (Power supply C only) |
| d | Exd II BT3-6 Gb (M5 indicator only) |
| Communication protocol | |
| N | No |
| H | Hart (Power supply C only) |
| M | ModBus (Power supply A&D only) |
| F | FF (Power supply C only , M5&M6 indicator only) |
| P | ProfiBus-PA (Power supply C only , M5&M6 indicator only) |
| Z | ZigBee (Power supply B only , , M5&M10 indicator only) |
| G | GPRS |

Option:

| ATT5- | Code | Description |
|--------------|------|---------------------------------------|
| Multi-choice | C | Magnetic filter |
| | F | With matching flange, fastener gasket |
| | Z | With front and rear straight section |
| | B | With the battery |
| | T | With modem |

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