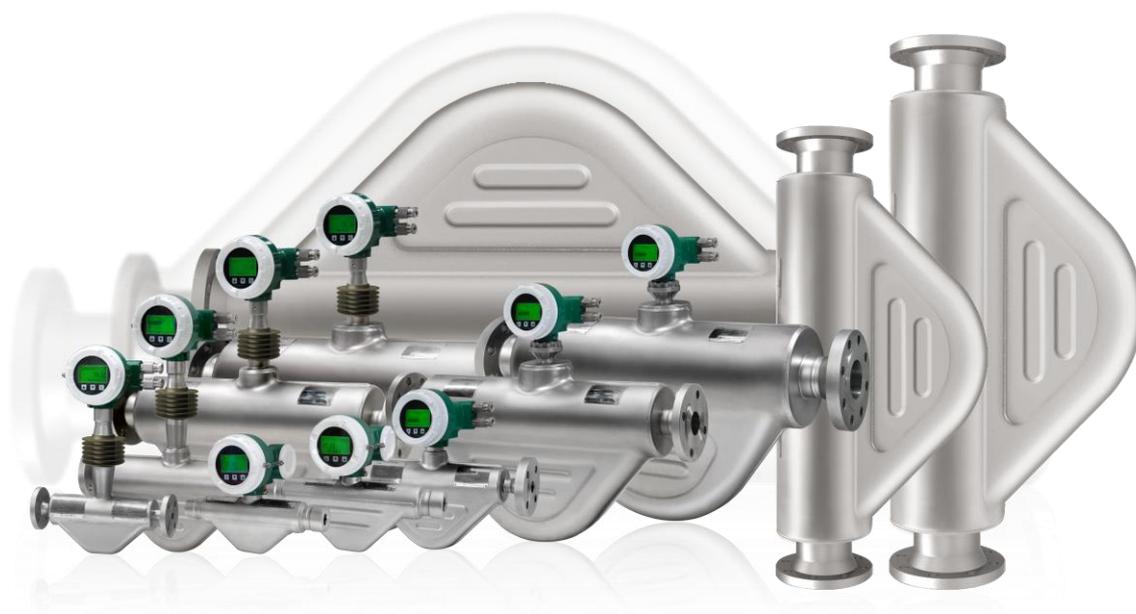




AMF Series Coriolis Mass flowmeters Catalog



Flowdigital.co.Ltd

Lucent technology flowmeasurement solution.



1. Product Overview

1.1

Coriolis Mass Flowmeter—Leading industrial instrumentation

Devoted to technical innovation and provide ideal solution for high pressure and cryogenic industries measuring.

Wide span ratio range.

High precision accuracy of measurement, realize industrial process control.

Modular signal converter.

Optimized hardware design is applicable to all series products.

Adopt the explosion proof and anticorrosion design, apply for a variety of environmental conditions, especially the explosion environment.



1.2

Principle and Application

Coriolis mass flowmeter is developed according to the principle of coriolis, it can directly measure parameters such as mass flow-rate, density and temperature. It has been widely used in Petrochemical, Natural gas, Chemical, Pipeline transportation industries and etc. Its function is for trade settlement and process control to ensure precision reflection, optimizing production, enhanced safety and maintenance cost-saving.

1.

The Technological Advantages

Measure the mass flow-rate directly, which is in the pipeline, and it would not be affected by temperature, pressure and flow rate.

High accuracy: generally 0.15%, maximum 0.05%, excellent repeatability.

Wide span ratio range, up to 100:1.

Realize measuring for mass flow-rate, volume flow-rate, density and temperature.

The stable and reliable performance.

Besides general viscosity liquids, it can also measure high viscosity and non-Newtonian liquids. It can not only measure the single phase flow but also the homogeneous multi-phase flow.

Excellent corrosion resistance, it is able to measure various common corrosive fluids.

The China classification society certificate of type approval is awarded.

2. Technical Overview & Specification

2.1

Coriolis Mass Flowmeter and Density Meter

| Model | Code for standard product | Product photo | Work temp. | Transmitter model | Some applications | | | |
|--------|---------------------------|---|------------|-------------------|--|-----------------------------|---|-------------------------|
| | | | | | Petrochemical engineering & New energy | Automotive & Smelt industry | Papermaking and pulp & Environmental monitoring | Cryogenic manufacturing |
| AMF008 | AMF008-TL4S |  | Cryogenic | T1000 | ● | ● | ● | ● |
| | AMF008-TL4I |  | Cryogenic | T2000 | ● | ● | ● | ● |
| AMF015 | AMF015-TP25I |  | Normal | T2000 (T1000) | ● | ● | ● | ○ |
| | AMF015-TP35I | | | | | | | |
| AMF020 | AMF020-TP25I |  | Normal | T2000 (T1000) | ● | ● | ● | ○ |
| AMF025 | AMF025-TL4S |  | Cryogenic | T1000 | ● | ● | ● | ● |
| | AMF025-TL4I |  | Cryogenic | T2000 | ● | ● | ● | ● |



AMF

| | | | | | | | | |
|--------|-----------------------|---|-----------|------------------|---|---|---|---|
| | AMF025-TN4I |  | Normal | T2000 | ● | ● | ● | ○ |
| AMF050 | AMF050-TL4I (tube) |  | Cryogenic | T1000 (T2000) | ● | ● | ● | ● |
| | AMF050-TL4I |  | Cryogenic | T2000 | ● | ● | ● | ● |
| | AMF050-TN4I |  | Normal | T2000 | ● | ● | ● | ○ |
| AMF080 | AMF080-TL4I (tube) |  | Cryogenic | T1000 (T2000) | ● | ● | ● | ● |
| | AMF080-TL4I |  | Cryogenic | T2000 | ● | ● | ● | ● |
| | AMF080-TN4I |  | Normal | T2000 | ● | ● | ● | ○ |

Note: 1. The symbol “●” indicate conformity, on the contrary, symbol “○” indicate inconformity. The following is the same.

2. Product pictures do not represent the product itself. The contents in the parentheses means the transmitter that can be equipped.

T2000 transmitter display can be equipped according to requirement. Pictures for reference only, take practicality as standard.



2.1.1

Specifications

General technical parameters

| | |
|---------------------|--|
| Accuracy | 0.15%, 0.2%, 0.5%, 1.0%..... |
| Repeatability | 0.075%、0.1%、0.25%、0.5% |
| Density | $\pm 0.001\text{g/cm}^3$ |
| Temp. | $\pm 1^\circ\text{C} \pm 0.5\% \times \text{Reading (unit: }^\circ\text{C)}$ |
| Ambient temp. | $-40^\circ\text{C} \sim +55^\circ\text{C}$ |
| Relative humidity | $\leq 95\%$ |
| Measuring medium | Gas, Liquid and Multi-phase flow |
| Housing material | 304 stainless steel, ZL401(Transmitter) |
| Meter tube material | 316L |

Technical parameters

| Model | Code for standard product | Work temp. | Medium temp. | W.P | Mounting Type | Conn. Size (Customizable) |
|--------|---------------------------|------------|---|-----------------------|---------------|--------------------------------------|
| AMF008 | AMF008-TL4S | Cryogenic | $-196^\circ\text{C} \sim +70^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Separated | HG/T20592Flange DN15 PN40 (RF) |
| | AMF008-TL4I | Cryogenic | $-196^\circ\text{C} \sim +70^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Integrated | |
| AMF015 | AMF015-TP25I | Normal | $-40^\circ\text{C} \sim +204^\circ\text{C}$ | $\leq 25 \text{ MPa}$ | Integrated | $G \frac{3}{4}$ Internal thread |
| | AMF015-TP35I | Normal | $-40^\circ\text{C} \sim +204^\circ\text{C}$ | $\leq 35 \text{ MPa}$ | Integrated | $NPT \frac{3}{4}$ Internal thread |
| AMF020 | AMF020-TP25I | Normal | $-40^\circ\text{C} \sim +204^\circ\text{C}$ | $\leq 25 \text{ MPa}$ | Integrated | G 1 (Internal thread) |
| AMF025 | AMF025-TL4S | Cryogenic | $-196^\circ\text{C} \sim +70^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Separated | HG/T20592Flange DN25 PN40 (RF) |
| | AMF025-TL4I | Cryogenic | $-196^\circ\text{C} \sim +70^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Integrated | |
| | AMF025-TN4I | Normal | $-40^\circ\text{C} \sim +204^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Integrated | |
| AMF050 | AMF050-TL4I (tube) | Cryogenic | $-196^\circ\text{C} \sim +70^\circ\text{C}$ | $\leq 4 \text{ MPa}$ | Integrated | HG/T20592Flange DN50 PN40 (RF) |



| | | | | | | |
|--------|---------------------------|-----------|----------------|--------|------------|------------------------------------|
| | AMF050-TL4I | Cryogenic | -196°C ~ +70°C | ≤4 MPa | Integrated | |
| | AMF050-TN4I | Normal | -40°C ~ +204°C | ≤4 MPa | Integrated | |
| AMF080 | AMF080-TL4I (U 型 tube) | Cryogenic | -196°C ~ +70°C | ≤4 MPa | Integrated | HG/T20592Flange DN100 PN40 (RF) |
| | AMF080-TL4I | Cryogenic | -196°C ~ +70°C | ≤4 MPa | Integrated | HG/T20592Flange DN80 PN40 (RF) |
| | AMF080-TN4I | Normal | -40°C ~ +204°C | ≤4 MPa | Integrated | |

Note: The customized service is available if exceed the W.P in the above table.

2.1.2

Transmitter & Controller

General technical parameters

| | | |
|------------------|---------------------------|---|
| Power voltage | 12VAC~30VAC / 15VDC~40VDC | |
| Output variables | Transmitter | Mass and volume flow-rate, Mass and volume total, Temperature and density. |
| | Transmitter | Mass and volume flow-rate, Mass and volume total, Temperature and density, Side flow, Side total. |
| Ambient temp. | -40°C~+55°C | |
| Elect. Conn. | 缆塞 M20×1.5 | |

a)

Technical parameters

| Model | Product photo | Visible function | | Output signal | | |
|-------|---|------------------|--------------|-------------------|-------|---|
| | | Without display | With display | Modbus/ RS-485 | Pulse | 4-20mA/HART Current Loop/HART Protocol |
| T1000 |  | ● | ○ | ● | ● | ○ |
| T2000 |  | ● | ● | ● | ● | ● Only for with display |



2.1.3

Nominal Diameter & Flow-rate

| Model | Nominal diameter | | Code for standard product | Max. flow-rate | | | | |
|--------|------------------|------|---------------------------|----------------|--------|---------|---------|---------|
| | inch | mm | | kg/min | Lb/min | gal/min | kg/h | l/h |
| AMF008 | 1/4 | DN08 | AMF008-TL4S | 25 | 55 | 6.6 | 1,500 | 1,500 |
| | | | AMF008-TL4I | 50 | 110 | 13 | 3,000 | 3,000 |
| AMF015 | 1/2 | DN15 | AMF015-TP25I | 30 | 66 | 8 | 1,800 | 1,800 |
| | | | AMF015-TP35I | 30 | 66 | 8 | 1,800 | 1,800 |
| AMF020 | 3/4 | DN20 | AMF020-TP25I | 120 | 264 | 31.7 | 7,200 | 7,200 |
| AMF025 | 1 | DN25 | AMF025-TL4S | 270 | 595 | 71 | 16,200 | 16,200 |
| | | | AMF025-TL4I | 270 | 595 | 71 | 16,200 | 16,200 |
| | | | AMF025-TN4I | 270 | 595 | 71 | 16,200 | 16,200 |
| AMF050 | 2 | DN50 | AMF050-TL4I (U tube) | 1500 | 3304 | 396 | 90,000 | 90,000 |
| | | | AMF050-TL4I | 1600 | 3524 | 423 | 96,000 | 96,000 |
| | | | AMF050-TN4I | 1600 | 3524 | 423 | 96,000 | 96,000 |
| AMF080 | 3 | DN80 | AMF080-TL4I | 1800 | 3965 | 476 | 108,000 | 108,000 |
| | | | AMF080-TL4I (U tube) | 2000 | 4405 | 528 | 120,000 | 120,000 |
| | | | AMF080-TN4I | 2000 | 4405 | 528 | 120,000 | 120,000 |



2.2

Test Performance

| | | |
|----------------------------|------------------------|---|
| Mass flow- rate error | 20:1 Within span ratio | $\pm 0.15\%$ |
| | 20:1 Out of span ratio | $\pm 0.15\% \pm [(\text{Zero stability divided by instantaneous flow-rate}) \times 100]\%$ |
| Error of volume flow- rate | 20:1 Within span ratio | $\pm 0.15\%$ |
| | 20:1 Out of span ratio | $\pm 0.15\% \pm [(\text{Zero stability divided by instantaneous flow-rate}) \times 100]\%$ |
| Repeatability error | 20:1 Within span ratio | $\pm 0.075\%$ |
| | 20:1 Out of span ratio | $\pm 0.075\% \pm [(\text{Zero stability divided by instantaneous flow-rate}) \times 100]\%$ |

Note: Zero stability value is get in laboratory, which is used to calculate the expected accuracy of sensor. Under the condition of zero flow-rate in laboratory, average flow-rate shall be in the range defined by the value of zero stability ($0 \pm \text{zero stability}$), and each size and model of sensor possesses a sole value of zero stability. Statistically, 95 percent of data points used shall be in the range defined by the value of zero stability.

2.3

Density Performance (only for liquid)

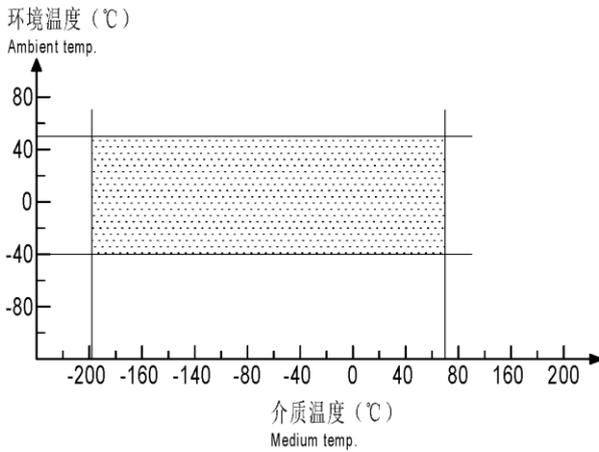
| Unit | g/cm^3 | kg/m^3 |
|-----------------|------------------------|------------------------|
| Error | ± 0.001 | ± 1 |
| Repeatability | ± 0.0005 | ± 0.5 |
| Flow-rate range | 0.2~5 | 200~5000 |



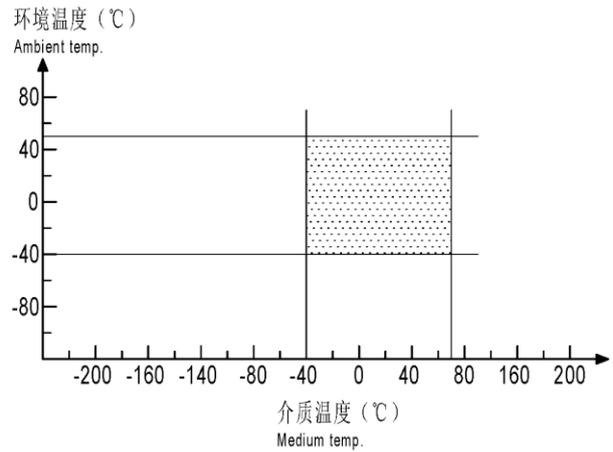
2.4

Temperature Performance

| | | |
|-------------------------|------------|---|
| Accuracy | All models | $\pm 1^{\circ}\text{C} \pm 0.5\% \times \text{Reading (unit:}^{\circ}\text{C)}$ |
| The limited temp. range | All models | See the below charts |



Cryogenic mass flowmeter temp. range



Normal temp. mass flowmeter temp. range

| | | |
|---------------------|------------------------|---|
| Medium temp. range | Cryogenic flowmeter | $-196^{\circ}\text{C} \sim +70^{\circ}\text{C}$ |
| | Normal temp. flowmeter | $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$ |
| Ambient temp. range | Storage | $-40^{\circ}\text{C} \sim +65^{\circ}\text{C}$ |
| | Working | $-40^{\circ}\text{C} \sim +55^{\circ}\text{C}$ |

2.5

Power and Wattage

| | |
|------------------------|---|
| Input voltage range | $12\text{VAC} \sim 30\text{VAC} / 15\text{VDC} \sim 40\text{VDC}$ |
| Max. power consumption | 5W |



2.6

Safety and Protection

| Model | Code for standard product | Work temp. | Transmitter model | Enclosure protection | Certification of explosion-proof | | | |
|--------|-------------------------------|------------|-------------------|----------------------|----------------------------------|----------------------|-----|-------------|
| | | | | | CNEX | | CCS | ATEX |
| | | | | | Ex d ib IIB T5 Gb | Ex d ib IIC T6 Gb | | |
| AMF008 | AMF008-TL4S | | T1000 | IP67 | ● | ○ | ● | In progress |
| | AMF008-TL4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| AMF015 | AMF015-TP25I、 AMF015-TP35I | | T1000 | IP67 | ● | ○ | ○ | In progress |
| | | | T2000 | IP67 | ○ | ● | ○ | ○ |
| AMF020 | AMF020-TP25I | | T1000 | IP67 | ● | ○ | ○ | In progress |
| | | | T2000 | IP67 | ○ | ● | ○ | ○ |
| AMF025 | AMF025-TL4S | | T1000 | IP67 | ● | ○ | ● | In progress |
| | AMF025-TL4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| | AMF025-TN4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| AMF050 | AMF050-L4I (U tube) | | T1000 | IP67 | ● | ○ | ● | In progress |
| | | | T2000 | IP67 | ○ | ● | ○ | ○ |
| | AMF050-TL4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| | AMF050-TN4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| AMF080 | AMF080-TL4I (U tube) | | T1000 | IP67 | ● | ○ | ● | In progress |
| | | | T2000 | IP67 | ○ | ● | ○ | ○ |
| | AMF080-TL4I | | T2000 | IP67 | ○ | ● | ○ | ○ |
| | AMF080-TN4I | | T2000 | IP67 | ○ | ● | ○ | ○ |

2.8

Installation

2.8.1

Overall Dimension for Installation

Dimension is metric unit: millimeter. *Deviation: $\pm 2\text{mm}$

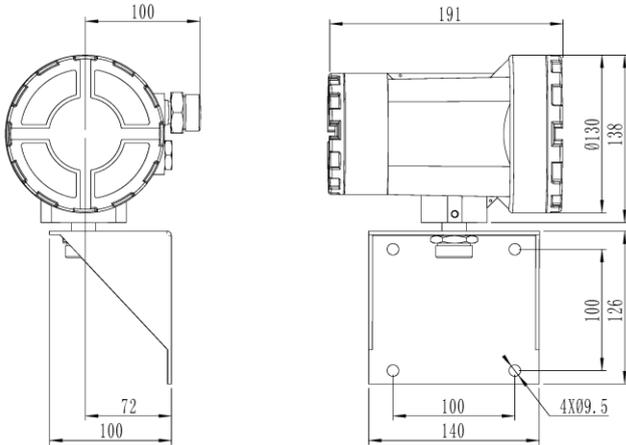


Fig. 1 The overall dimensions of T1000 transmitter and mounting holder for separated flowmeter.

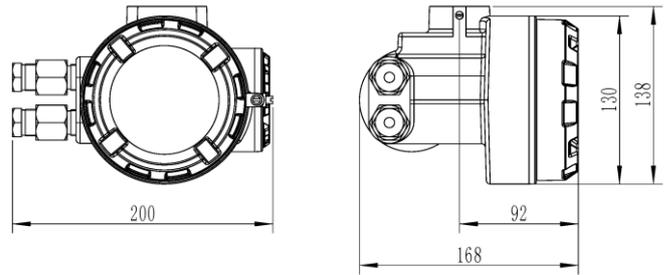


Fig. 2 The overall dimensions of T2000 transmitter.

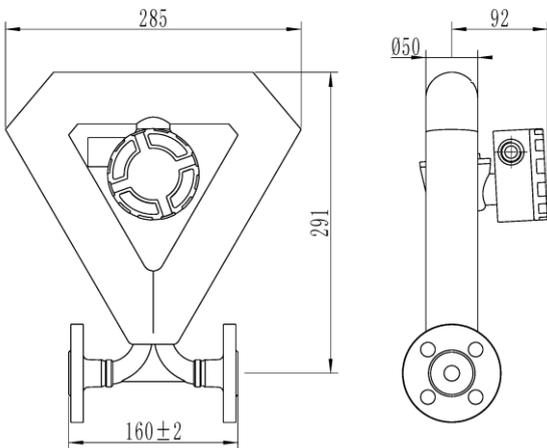


Fig. 3 The overall dimensions of AMF008-TL4S

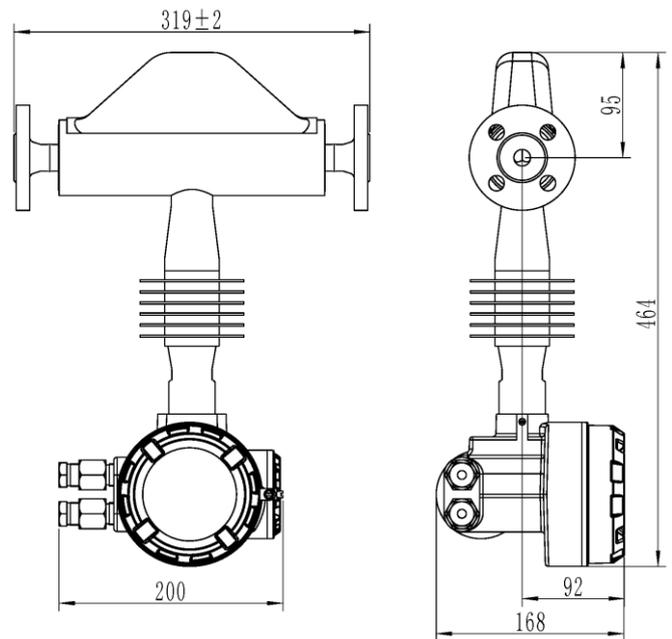


Fig. 4 The overall dimensions of AMF008-TL4I

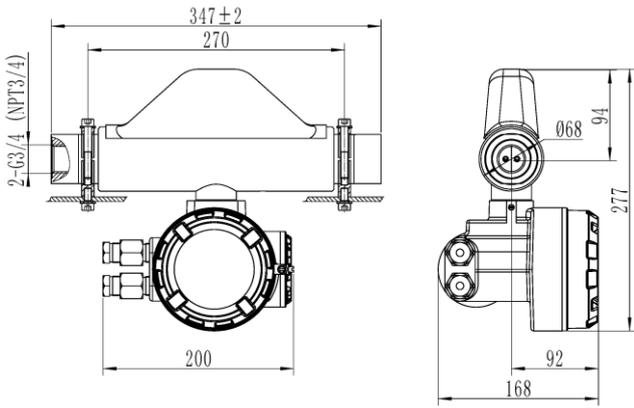


Fig. 5 The overall dimensions of AMF015-TP25I(Conn.Size:G3/4)& AMF015-TP35I(Conn.Size:NPT3/4)

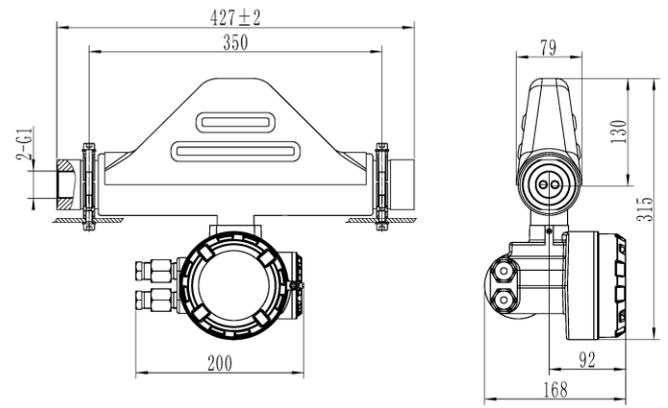


Fig. 6 The overall dimensions of AMF020-TP25I

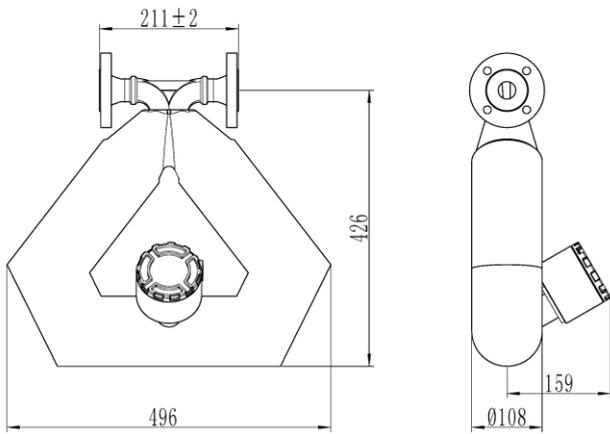


Fig. 7 The overall dimensions of AMF025-TL4S

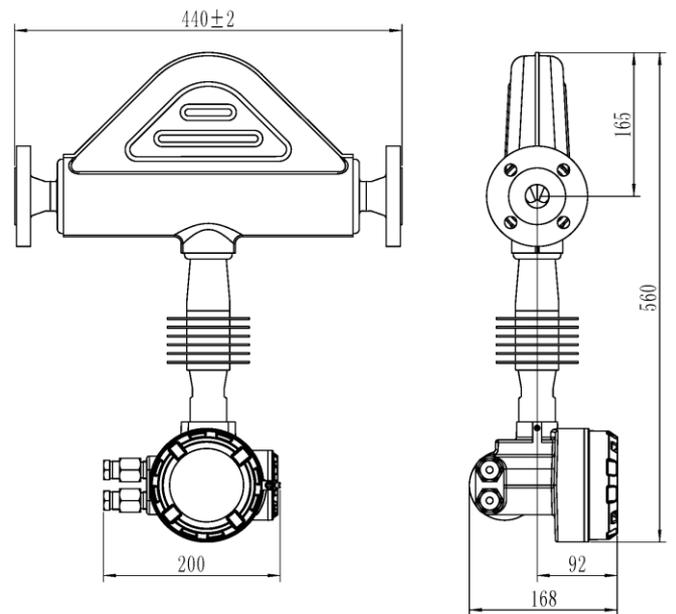


Fig. 8 The overall dimensions of AMF025-TL4I

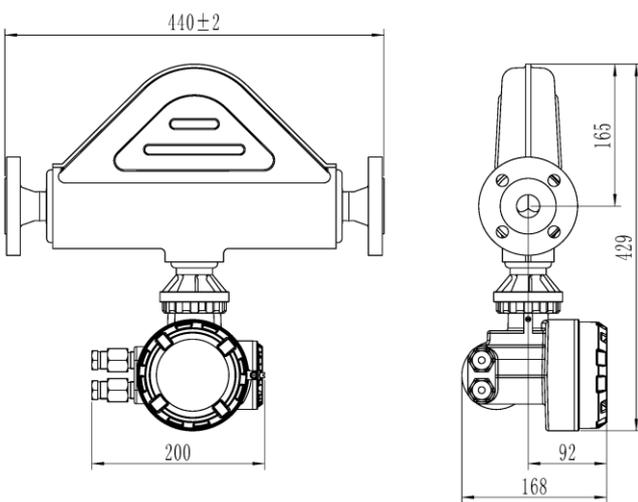


Fig. 9 The overall dimensions of AMF025-TN4I

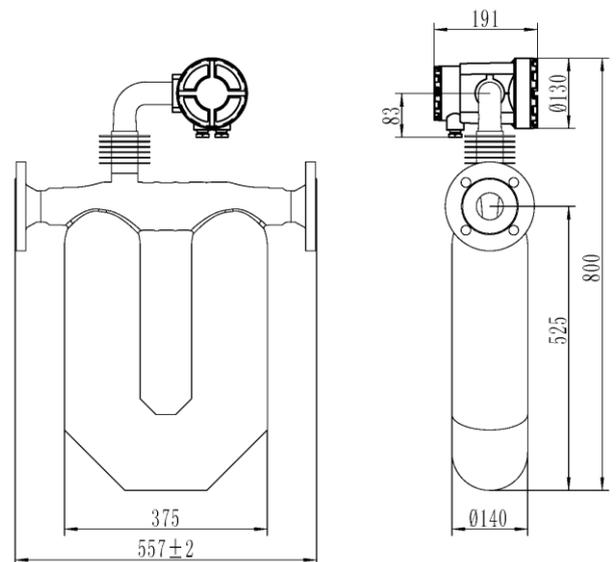


Fig. 10 The overall dimensions of AMF050-TL4I (U tube)

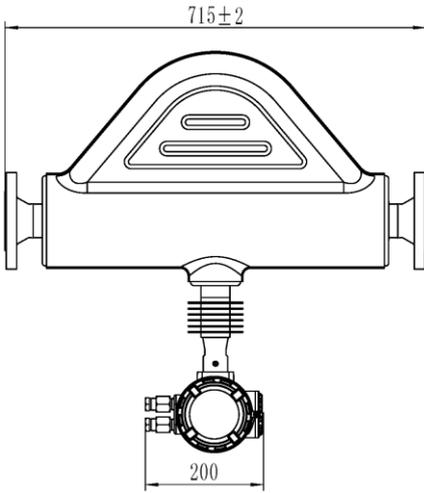


Fig. 11 The overall dimensions of AMF050-TL4I

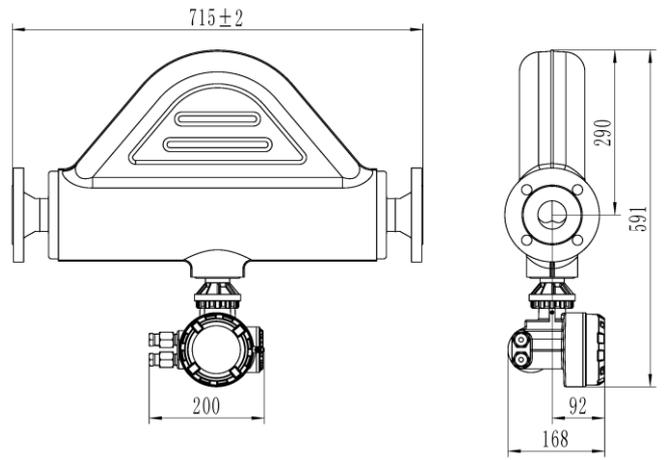


Fig. 12 The overall dimensions of AMF050-TN4I

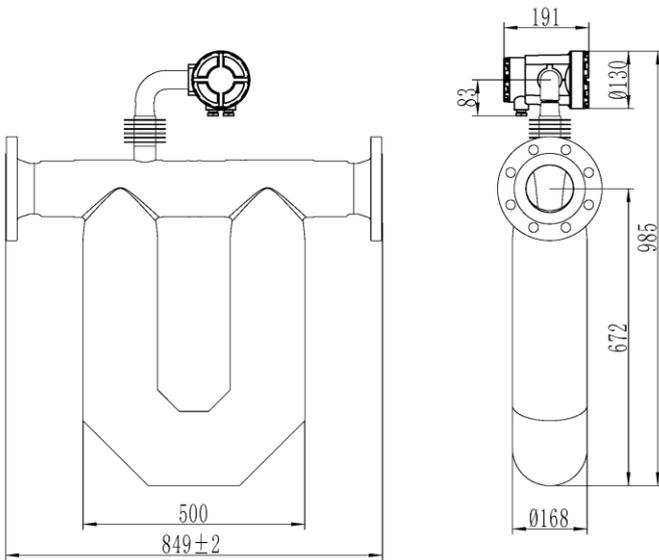


Fig. 13 The overall dimensions of AMF080-TL4I (U tube)

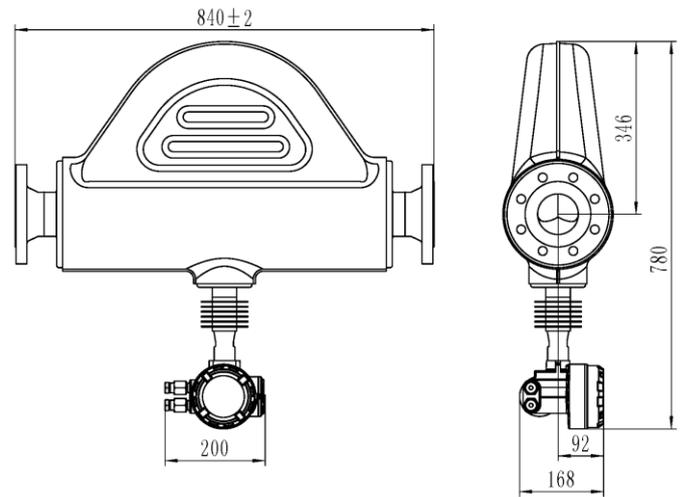


Fig. 14 The overall dimensions of AMF080-TN4I

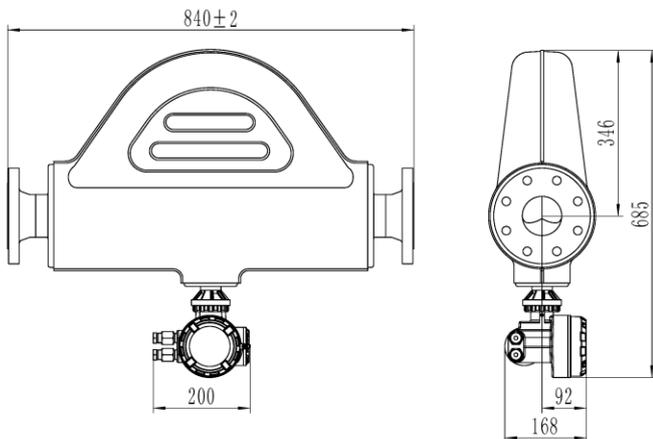


Fig. 15 The overall dimensions of AMF080-TN4I

Note: Both transmitters can rotate freely within the plane.

Installation Methods

Warning! In vertical or horizontal installation, the flow direction of medium in pipeline shall be in accordance with the direction of indicating arrow on the flowmeter body.

Warning! If vertical mounting is required, the medium in pipeline must flow from bottom to up.

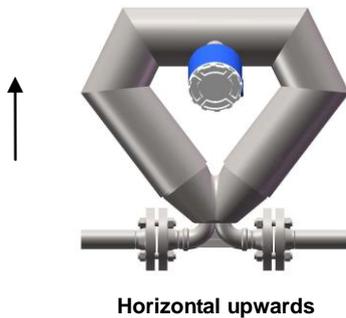
Warning! Flowmeter must be installed on steady steel sheets or flanges.

When measure gas: horizontal upwards or vertical, horizontal upwards refers to the meter tube (inside the housing) should be located upward, and upside-down is forbidden.

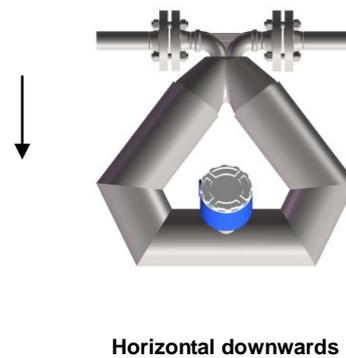
When measure liquid: horizontal downwards or vertical, horizontal downwards refers to the meter tube (inside the housing) should be located downward, and upside-down is forbidden.

Horizontal installation diagram:

Gas medium:



Liquid medium:



Note: Both transmitters can rotate freely within the plane.



3. 订购信息 Order Information

| The code of main specifications. | | | | | | | | |
|----------------------------------|------------------|------|-----------------|------------------------|---------------------|--|--|---|
| AMF | Nominal diameter | | | | | | | |
| | 008 | DN8 | $\frac{1}{4}$ " | | | | | |
| | 015 | DN15 | $\frac{1}{2}$ " | | | | | |
| | 020 | DN20 | $\frac{3}{4}$ " | | | | | |
| | 025 | DN25 | 1" | | | | | |
| | 050 | DN50 | 2" | | | | | |
| | 080 | DN80 | 3" | | | | | |
| | | | | | | | | |
| | | - | Brand | | | | | |
| | | | T | TRUFLOW | | | | |
| | | | X | The customized service | | | | |
| | | | | Applied characteristic | | | | |
| | | | P | High pressure | | | | |
| | | | L | Cryogenic | | | | |
| | | | H | High temp. | | | | |
| | | | N | Normal | | | | |
| | | | C | The customized service | | | | |
| | | | | Working pressure | | | | |
| | | | | 04 | $\leq 4\text{MPa}$ | | | |
| | | | | 06 | $\leq 6\text{MPa}$ | | | |
| | | | | 10 | $\leq 10\text{MPa}$ | | | |
| | | | | 20 | $\leq 20\text{MPa}$ | | | |
| | | | | 25 | $\leq 25\text{MPa}$ | | | |
| | | | | 35 | $\leq 35\text{MPa}$ | | | |
| | | | | 45 | $\leq 45\text{MPa}$ | | | |
| | | | | Mounting type | | | | |
| | | | | I | Integrated | | | |
| | | | | S | Separated | | | |
| AMF | | - | | | | | | Complete product order code(The first part) |

Note: Codes for standard product compose of this part.

For example, the code for standard product AMF015-TP25I means: AMF015model, Nominal diameter is 15mm, TRUFLOW brand, High pressure, Max. Working pressure is 25MPa, Integrated mounting. Refer to previous pages for detailed specifications information of standard product



| The code of other specifications. | | | | | | |
|-----------------------------------|--------------------|---|--|--|--|--|
| Meter tube material | | | | | | |
| M1 | 316L | | | | | |
| M2 | Monel | | | | | |
| M3 | Hastelloy | | | | | |
| Accuracy | | | | | | |
| A1 | 0.1 | 0.1% | | | | |
| A2 | 0.15 | 0.15% | | | | |
| A3 | 0.2 | 0.2% | | | | |
| A4 | 0.25 | 0.25% | | | | |
| A5 | 0.3 | 0.3% | | | | |
| A6 | 0.5 | 0.5% | | | | |
| A7 | 1.0 | 1.0% | | | | |
| A8 | 1.5 | 1.5% | | | | |
| Conn. type | | | | | | |
| C1 | Thread | | | | | |
| C2 | Flange | | | | | |
| Conn. classification and Std. | | | | | | |
| | I | Internal thread. If inlet connection is different from outlet connection, describe as inlet (outlet), like I(E) | | | | |
| | E | External thread | | | | |
| | HG | Flange Std.: HG/T 20592 | | | | |
| | AS | Flange Std.: ASME B16.5 | | | | |
| Conn. Size | | | | | | |
| | DN (X) | HG Std.: the nominal diameter of flange | | | | |
| | (X)" | ASME Std.: the nominal diameter of flange | | | | |
| | WN | Welding neck flange | | | | |
| | SO | Slip-on neck Flange | | | | |
| | RF | RF sealing | | | | |
| | MFM | MFM sealing | | | | |
| | RJ | RTJ sealing | | | | |
| | TG | TG sealing | | | | |
| | FF | FF sealing | | | | |
| | G* or M*×* or NPT* | Types and dimensions of tread | | | | |
| Application condition | | | | | | |
| | W1 | Normal working condition | | | | |
| | W2 | Special working condition | | | | |
| | | | | | | Complete product order code(The second part) |



| The code of transmitter specifications and certification. | | | | | |
|---|----------|------|------------------------|---------------------------------|---|
| Series of transmitter | | | | | |
| T | T series | | | | |
| C | C series | | | | |
| Type of transmitter | | | | | |
| | 10 | 1000 | | | |
| | 20 | 2000 | | | |
| Visible function | | | | | |
| | | D | Multi-function display | | |
| | | X | Without display | | |
| Output signal | | | | | |
| | | | M | Modbus/RS-485 | |
| | | | P | Pulse | |
| | | | H | HART HART Protocol | |
| | | | L | 4-20mA 4mA to 20mA Current loop | |
| | | | J | RS-485//4-20mA All of above | |
| Certification | | | | | |
| | | | Q1 | CCS | |
| | | | Q2 | ATEX | |
| | | | Q3 | CNEX | |
| | | | Q4 | CCS ATEX | |
| | | | Q5 | CCS CNEX | |
| | | | Q6 | ATEX CNEX | |
| | | | | | Complete product order code(The third part) |

: Provide a complete product order code, when order product:

| | | | |
|--|---|---|---|
| The code of main specifications for flowmeter. | The code of other specifications for flowmeter. | - | The code of transmitter specifications and certification. |
|--|---|---|---|

示例: 订购代码 For example, the order code:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|---|---|---|----|---|----|----|----|---|-------------------------------|----|---|---|----|---|---|----|
| AMF | 015 | - | T | P | 25 | I | M1 | A6 | C1 | I | G ³ / ₄ | W1 | - | T | 20 | D | L | Q3 |
|-----|-----|---|---|---|----|---|----|----|----|---|-------------------------------|----|---|---|----|---|---|----|

Meaning: AMF015model, Nominal diameter is 15mm, Brand is TRUFLOW CANADA INC., High pressure, Max. Working pressure is 25MPa, Integrated mounting, Meter tube mat'l is 316L, Accuracy grade 0.5, G³/₄ inch internal thread conn. ,

Normal working condition, Equipped T2000 transmitter, With display, 4mA to 20mA current output signal, CNEX Certifica

