

## Turbine Gas Flowmeter

### MAIN FEATURES

- The new sensor has the advantages of low starting flow, small pressure loss, good anti vibration and anti pulsating flow performance, corrosion resistance, good reliability and long service life.
- Adopt new microprocessor and high-performance integrated chip, with high calculation accuracy, powerful function and superior performance.
- Adopt advanced micro power consumption technology, low power consumption of the whole machine. It can not only run with internal battery for a long time, but also run with external power supply.
- According to the flow frequency signal, the instrument coefficient can be automatically corrected in eight sections at most, and the calculation accuracy of the instrument can be improved according to the user's needs.
- Adopt EEPROM data storage technology, with the function of historical data storage and query, three historical data recording modes for users to choose.
- The meter head can rotate 180 ° and is easy to install and use.
- High accuracy, generally up to  $\pm 1.5\% R$ ,  $\pm 1.0\% R$ .
- Good repeatability, short-term repeatability can reach  $0.05\% R \sim 0.2\% R$ . It is precisely because of its good repeatability that it is the preferred flowmeter in trade settlement.
- It can detect the temperature, pressure and flow of the measured gas, automatically track and compensate the flow, and display the gas flow under the standard state (PN = 101.325kpa, TN = 293.15K); it can query the temperature, pressure, time, date and other data in real time.



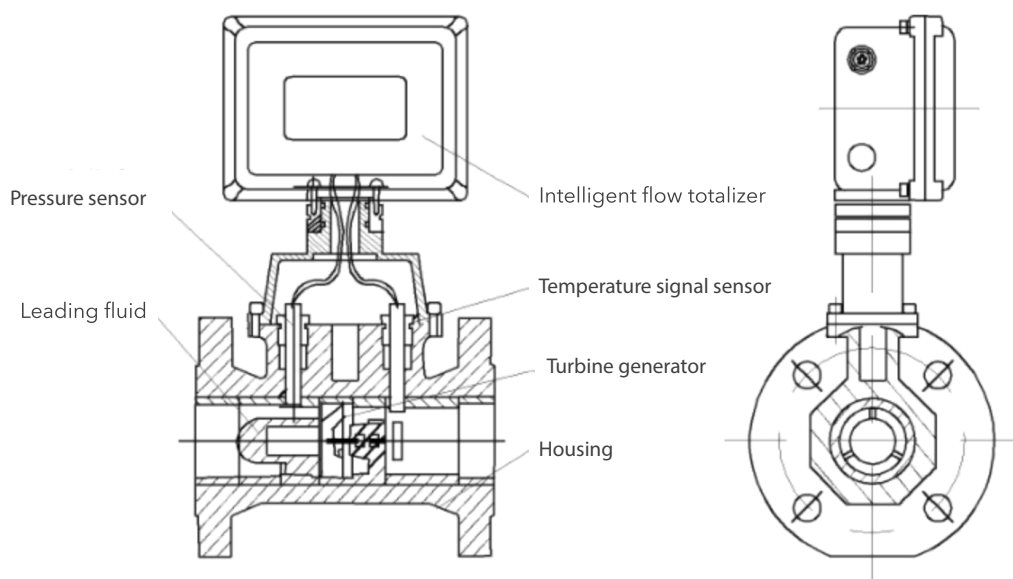
### OVERVIEW

MM4000series gas turbine flowmeter is a new type of speed meter. It adopts advanced micro processing technology and integrates the theories of gas mechanics, fluid mechanics and electromagnetics. It is a new generation of gas precision meter with high accuracy and reliability, which integrates temperature, pressure, flow sensor and intelligent flow totalizer. Due to its excellent low-pressure and high-pressure metering performance, various signal output modes and low sensitivity to fluid disturbance, it has strong function, high calculation accuracy and performance. It is widely used in the measurement of non corrosive gases such as natural gas, coal to gas, liquefied gas, light hydrocarbon gas, petroleum gas, argon, high-pressure hydrogen, biogas etc

### SPECIFICATION

|                                   |  |
|-----------------------------------|--|
| Measured medium                   | No impurity, medium and low flow gas   |
| Diameter (mm) and connection mode | 25, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300 flanged<br>25, 40, 50 threaded  |
| Accuracy                          | $\pm 1.5\% R$ ( $\pm 1\% r$ to be specially made)  |
| Range ratio                       | 1 : 10 ; 1 : 20 ; 1 : 30   |
| Instrument material               | Body: 304 stainless steel or cast aluminum<br>Impeller: anti corrosion ABS or high quality aluminum alloy  |
| Applicable conditions             | Medium temperature: - 20 °C - + 80 °C, Ambient temperature: - 30 °C ~ + 60 °C<br>Relative humidity: 5% - 90%, Atmospheric pressure: 86kpa ~ 106kpa   |
| Power supply                      | A. External power supply: + 24VDC $\pm 15\%$ , ripple $\leq \pm 5\%$ , suitable for 4-20mA output, pulse output, RS485<br>B. Internal power supply: 1 set of 3.0V10AH lithium battery, which works normally when the battery voltage is 2.0-3.0V<br>Undervoltage indication occurs when the voltage is less than 2.0 |
| Power consumption                 | A. External power supply: < 1W<br>B. Internal power supply: average power consumption $\leq 1W$ , can be used continuously for more than 3 years   |
| Signal output                     | Pulse signal, 4-20mA current signal, control signal  |
| Communication                     | RS485  |
| Real time recording               | Start stop record, diary record and fixed time interval record   |
| Electric interface                | Internal thread M20 $\times 1.5$ or other  |
| Explosion proof                   | Exd II CT6   |
| Protection level                  | IP65   |

## OUTLINE CONSTRUCTURE



| Flange connection |  |  | Thread connection |  |
|-------------------|--|--|-------------------|--|
| Standard type     | Temperature&pressure compensation type | Temperature&pressure compensation type (aluminum body) | Standard type     | Temperature&pressure compensation type |
|                   |  |  |                   |  |

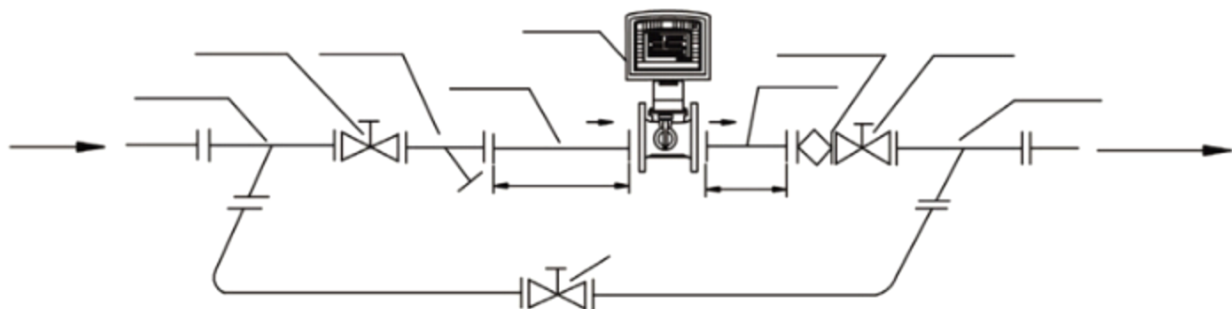
| Nominal caliber (mm) | Flange connection |                |                         |                         |               |                    | Thread connection                            |                           |                    |
|----------------------|-------------------|----------------|-------------------------|-------------------------|---------------|--------------------|--|---------------------------|--------------------|
|                      | Meter length (mm) | Flange OD (mm) | Bolt hole distance (mm) | Bolt hole Diameter (mm) | Hole Quantity | Bolt specification | High pressure & temperature meter length(mm) | Standard meter length(mm) | External thread(G) |
| 25                   | 170               | 115            | 85                      | 14                      | 4             | M12                | 170  | 170                       | G2                 |
| 40                   | 200               | 150            | 110                     | 18                      | 4             | M16                | 200  | 140                       | G2                 |
| 50                   | 200               | 165            | 125                     | 18                      | 4             | M16                | -  | 220                       | G5/2               |
| 65                   | 240               | 185            | 145                     | 18                      | 4             | M16                |  |                           |                    |
| 80                   | 240               | 200            | 160                     | 18                      | 8             | M16                |  |                           |                    |
| 100                  | 300               | 220            | 180                     | 18                      | 8             | M16                |  |                           |                    |
| 125                  | 240               | 250            | 210                     | 18                      | 8             | M16                |  |                           |                    |
| 150                  | 450               | 285            | 240                     | 22                      | 8             | M20                |  |                           |                    |
| 200                  | 500               | 340            | 295                     | 22                      | 12            | M20                |  |                           |                    |
| 250                  | 500               | 405            | 335                     | 26                      | 12            | M24                |  |                           |                    |
| 300                  | 300               | 460            | 410                     | 26                      | 12            | M24                |  |                           |                    |
| 350                  | 350               | 520            | 470                     | 26                      | 16            | M24                |  |                           |                    |
| 400                  | 400               | 580            | 525                     | 30                      | 16            | M27                |  |                           |                    |

## FLOW & PRESSURE RANGE

| Instrument caliber | Standard range (m <sup>3</sup> /h) | Extended range (m <sup>3</sup> /h) | Conventional withstand voltage level (Mpa) | Special high pressure rating (Mpa) | Installation mode |
|--------------------|------------------------------------|------------------------------------|--|------------------------------------|-------------------|
| DN20               | 2.2~25                             | 4~40                               | 1.6  | 2.5, 4.0                           | Flange            |
| DN25               | 2.2~25                             | 4~40                               | 1.6  | 2.5, 4.1                           | Flange (Thread)   |
| DN32               | 5~50                               | 6~60                               | 1.6  | 2.5, 4.2                           | Flange            |
| DN40               | 5~50                               | 6~60                               | 1.6  | 2.5, 4.3                           | Flange (Thread)   |
| DN50               | 6~65                               | 5~70                               | 1.6  | 2.5, 4.4                           | Flange            |
|                    | 10~100                             | 8~100                              | 1.6  | 2.5, 4.5                           | Flange            |
| DN65               | 15~200                             | 10~200                             | 1.6  | 2.5, 4.6                           | Flange            |
| DN80               | 13~250                             | 10~160                             | 1.6  | 2.5, 4.7                           | Flange            |
|                    | 20~400                             |                                    | 1.6  | 2.5, 4.0                           | Flange            |
| DN100              | 20~400                             | 13~250                             | 1.6  | 2.5                                | Flange            |
|                    | 32~650                             |                                    | 1.6  | 2.5                                | Flange            |
| DN125              | 25~700                             | 20~800                             | 1.6  | 2.5                                | Flange            |
| DN150              | 32~650                             | 80~1600                            | 1.6  | 2.5                                | Flange            |
|                    | 50~1000                            |                                    | 1.6  | 2.5                                | Flange            |
| DN200              | 80~1600                            | 50~1000                            | 1.6  | *                                  | Flange            |
|                    | 130~2500                           |                                    | 1.6  | *                                  | Flange            |
| DN250              | 130~2500                           | 80~1600                            | 1.6  | *                                  | Flange            |
|                    | 200~4000                           |                                    | 1.6  | *                                  | Flange            |
| DN300              | 200~4000                           | 130~2500                           | 1.6  | *                                  | Flange            |
|                    |                                    | 320~6500                           | 1.6  | *                                  | Flange            |

## INSTALLATION

- In order to facilitate maintenance and not affect the normal transmission of fluid, it is recommended to set bypass pipe as shown in the figure below.
- In order to prevent impurities from entering the flowmeter, a filter must be installed at the upstream of the flowmeter  $\geq 2DN$
- Before installing the flowmeter, the sundries, welding slag and dust in the pipeline shall be cleaned.
- The flowmeter has a special rectifier with superior performance, so the requirements for straight pipe section are low, but the front straight pipe section must be  $\geq 2DN$ , and the rear straight pipe section must be  $\geq 1DN$ . (for the front straight pipe section, there are elbows, reducers, pressure regulating valves and other installation methods that are suitable)
- Install the flowmeter horizontally and make sure that the direction of air flow and the direction mark on the flowmeter housing are consistent. (when vertical installation is required, it shall be registered at the time of ordering, and the product shall be configured accordingly; when installation and use, the air flow direction shall be from top to bottom)
- When installing the flowmeter horizontally, it is recommended to install the steel expansion joint (compensator) after the straight pipe section behind the flowmeter. The expansion joint must meet the requirements of the nominal diameter and nominal pressure of the pipeline design. (the expansion device is used to compensate the pipeline stress and facilitate the installation and disassembly of flowmeter)
- When the flowmeter is installed for outdoor use, it is recommended to add a protective cover to prevent rainwater immersion and strong 8-exposure from affecting the service life of the flowmeter.
- There shall be no strong external magnetic field interference around the flowmeter. The flowmeter shall be reliably grounded, but it shall not be shared with the grounding wire of the strong current system.



## ORDER GUIDE

| FMT812 | Parameter                                  | Explanation  | Order Code                             |
|--------|--|--|--|
| A      | Typs                                       | 1-Flange standard type<br>2-Flange temperature & pressure compensation type<br>3-Flange Temperature & pressure compensation (aluminum body)<br>4-Thread standard type<br>5-Thread temperature & pressure compensation type | 1                                      |
| B      | Caliber                                    | DN20~300 (See Above Table )  | Please choose specific diameter needed |
| C      | Pressure (MPa)                             | A ≤0.6    B ≤1    C ≤1.6    D ≤2.5<br>E ≤4    F ≤6    G ≤10    H ≤16   | A                                      |
| D      | Working temperature                        | 1-≤50°C    2-≤100°C    3-≤150°C    4-≤200°C<br>5-≤250°C    6-≤300°C    7-≤350°C  | 1                                      |
| E      | Medium                                     | A-Gas<br>B-Other   | A                                      |
| F      | Power supply                               | A - 3.6V battery    B-DC24V.    C- DC12V<br>D-AC220 with power supply    E-DC3.6V/24V dual power supply<br>F-DC7.5V battery    G-DC15V battery    H-DC24V battery  | B                                      |
| G      | Signal output                              | 1-4 ~ 20mA<br>2-Pulse<br>3-RS485<br>4 -Hart 4 ~ 20mA<br>5-RS485 4 ~ 20mA<br>6-3.6v 4 ~ 20mA<br>7-DC1 ~ 5V three wire system  | 2                                      |
| H      | Display                                    | A -Onsite Display<br>B-Split remote transmission display<br>C-Split display  | B                                      |
| I      | Sensor material                            | 1-304 sensor<br>2-316 sensor<br>3-Titanium sensor<br>4- Hastelloy sensor<br>5-Platinum level sensor<br>6-Tantalum sensor   | 1                                      |
| J      | Body material                              | A-304 stainless steel<br>B-316 stainless steel   | B                                      |
| K      | Flange                                     | A-304 stainless steel<br>B-316 stainless steel   | A                                      |
| L      | Explosion proof grade                      | A-EXIL BT4<br>B- EXIL CT4<br>C-EXIL BT6<br>D-EXIL CT6<br>E-General F-protection class IP65   | A                                      |
| M      | With temperature and pressure compensation | 1-Temperature compensation<br>2-Pressure compensation<br>3-Temperature and pressure compensation<br>4-Without temperature and pressure compensation  | 2                                      |



**CONNECT+**  
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