



## MASS FLOW METER



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**Zhejiang Sealand Technology Co., Ltd.** is a professional hi-tech enterprise, founded in 2009 with 45 million CNY registered capital. Located in Binhai ETDZ, Wenzhou, the factory covers an area of 4000m<sup>2</sup>, equipped with advanced production and test facilities.

Sealand started to research oil and gas equipment in 1990 first, and then focuses on the research, development, production, sale and service of mass flow meter. After decades of effort, it learned the core technology and manufacturing technique in this area; the products reach domestic leading level, and meet the international standards. Difficulty has been solved to measure fluid (liquid/gas) at high/low temperature, at a low flow rate and at a large pressure fluctuation, meeting the need for quick-acting and high accuracy in the market. Besides, solution is available for special requirements, including design, installation, test & other services.

As a technology enterprise, Sealand communicates and cooperates with colleges and research institutes to keep technology updated. In the meantime, it concentrates on quality management as well, and obtained Certificate of Quality System ISO9001, ISO14000, ISO18000, Certificate of Explosion-proof and Certificate of Metrology.

Sealand is looking forward to establishing a long-term cooperation with you and create a bright future together!



## Main Parameters



Model	Diameter (mm)	Max.flow (kg/min)	Max.working pressure (MPa)	Accuracy grade	Zero stability (kg/min)
CG-06	6	18	4	0.2	0.009
CNG-15	15	70	25	0.2	0.003
CG-25	25	200	4	0.2	0.017
CG-40	40	500	4	0.2	0.029
CG-50	50	1000	4	0.2	0.038
CG-80	80	3000	4	0.2	0.115



## Production & Testing Equipment



Testing equipment



Burn-in area



METTLER TOLEDO IND560



CNC pipe bending machine



Assembly line



Vacuum brazing furnace

# MASS FLOW METER

## Introduction

Mass flow meter is a device that measures the mass of a fluid traveling through a tube, in accordance with Coriolis Principle. Coriolis mass flow meter can directly measure fluid mass flow, and has great influence on processing and measuring methods in energy & chemical industries. Compared with traditional volumetric flow measurement, it has following advantages:

1. High accuracy: Generally from 0.1% - 0.5%.
2. Wide application: Besides common fluid, mass flow meter can measure fluids such as non-Newtonian fluid, all kinds of slurry, suspensions, etc.
3. Convenient installation: No specific requirement of choosing upstream or downstream pipe.
4. High reliability

## Other Features



Requires low maintenance, because of no movable parts.



Shows many parameters simultaneously, such as mass flow, temperature, density, etc.



Not affected by the fluid, saving design & installation cost.

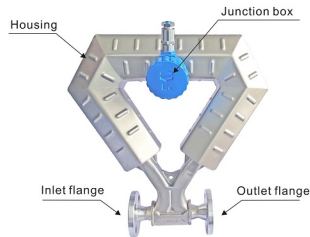


One sensor can be used for various fluids.

## Flow Sensor



Flow sensor is a phase-sensitive resonant sensor based on Coriolis effect, composed of vibration tube, signal detector, concussion driver, structural support, housing.



CG-25



Inlet splitter

## Flow Transmitter



Flow transmitter is a micro-programming-centered electronic system, supplying driving force to sensor, transforming sensor signal into mass flow signal, and improving measurement accuracy in accordance with temperature parameter.

It is composed of switching power supplier, safety grating, core processor board, display module, etc, installed in a ex-proof junction box. Switching power supply offers power for transmitter; safe grating isolates flow sensor and transmitter intrinsically; core processor detects & processes sensor phase signal, sends mass flow signal and processes communication.



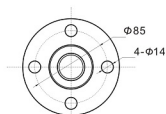
## Installation



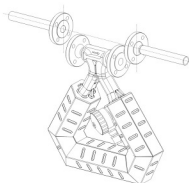
### A. Installation of sensor

The installation can be adjusted to local conditions, because the meter measures mass flow directly, the accuracy is not influenced by fluid, and there is no straight pipeline requirement.

- 2 pipelines should be in the same horizon and centered;
- Pipe flanges should be perpendicular to the pipe;
- Both pipelines should be fixed near pipe flanges;
- Bolt holes of pipe flange and sensor flange should be aligned;
- The fluid direction should be the same as marked on sensor.



Connection of sensor flange

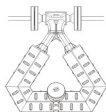


### b. Installation of transmitter

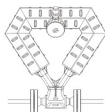
- Easy for operation and to check the data
- Avoid direct sunlight
- Standard ambient temperature & ex-proof
- Keep away from strong electromagnetic interference devices
- Use specified power supply

### c. Installation for different fluids

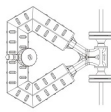
Liquid



Gas



Slurry

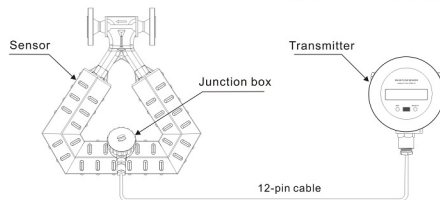


Note: It's better to adopt vertical installation if the medium contains liquid/slurry

## Sensor & Transmitter Connection



### Remote version



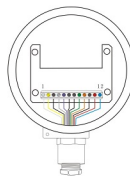
### Key points of waterproof junction box :

- 12-pin cable should be connected with explosion-proof joints;
- Joints should be wrapped with 3-4 layers of raw material belt;
- Junction box cover should be fixed after wiring, and make sure the o-ring is of high quality;
- Sealing interface should be reinforced when it comes to LNC.

## Wiring Definition



### Transmitter Wiring

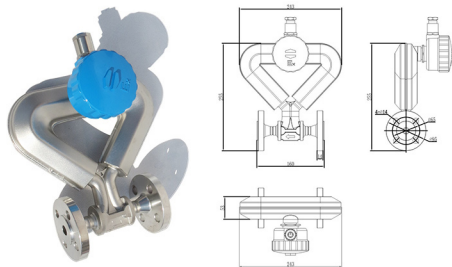


### Wiring definition of sensor signal output terminals 12P:

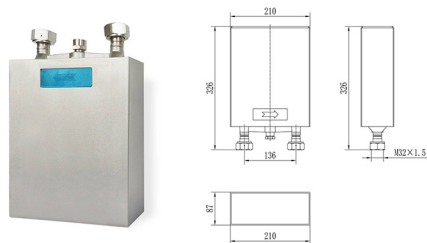
S/N	1	2	3	4	5	6	7	8	9	10	11	12
Code	R+	R-	PE	L+	L-	TPE	S <sub>2</sub>	S <sub>1</sub>	C <sub>1</sub>	DPE	D-	D+
Color	White	Yellow	Black (Shield)	Gray	Purple	Black (Shield)	Black	Green	Orange	Black (Shield)	Red	Blue
Function	Right coil detection		Left coil detection		Temperature detection				Coil driver			



Model no.	CG-06
Mass accuracy grade	0.2
Max. flow rate	18 kg/min
Temp. accuracy	±1°C
Zero stability	0.03kg/h
Repeatability	0.05%
MWP	4MPa
Nominal diameter	6mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	≤95%, non condensed
Loss of pressure	≤0.2MPa
Ex-mark	Ex[ib]IIBT1~T6 Gb / Ex[ib]IICT1~T6 Gb
Atmospheric Pressure	86 ~ 106kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	390*390*310mm
G.W.	8.6kgs
Warranty	2 years



Model no.	CNG-15
Mass accuracy grade	0.2
Max. flow rate	70 kg/min
Temp. accuracy	±1°C
Zero stability	0.06kg/h
Repeatability	0.05%
MWP	25MPa
Nominal diameter	15mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	≤95%, non condensed
Loss of pressure	≤0.2MPa
Ex-mark	Exd[ib]IIBT3 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	630*630*580mm
G.W.	14kgs
Warranty	2 years



## Mass Flow Meter CG-15

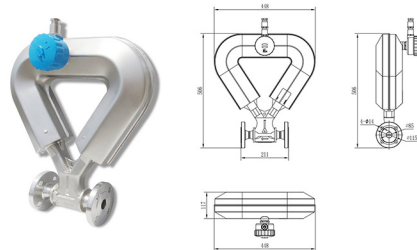
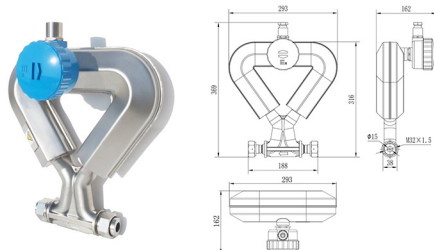


Model no.	CG-15
Mass accuracy grade	0.2
Max. flow rate	50kg/min
Temp. accuracy	±1°C
Zero stability	0.04kg/h
Repeatability	0.05%
MWP	25MPa
Nominal diameter	15mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	≤95%, non condensed
Loss of pressure	≤0.2MPa
Ex-mark	Exd[ib]IIBT3 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	445*370*405mm
G.W.	12kgs
Warranty	2 years

## Mass Flow Meter CG-25



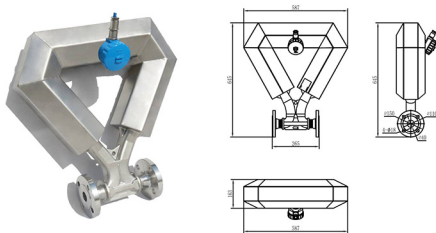
Model no.	CG-25
Mass accuracy grade	0.2
Max. flow rate	200 kg/min
Temp. accuracy	±1°C
Zero stability	0.3kg/h
Repeatability	0.02%
MWP	4MPa
Nominal diameter	25mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	≤95%, non condensed
Loss of pressure	≤0.2MPa
Ex-mark	Ex[ib]IIBT1~T6 Gb / Ex[ib]IICT1~T6 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	690*670*410mm
G.W.	21kgs
Warranty	2 years



## Mass Flow Meter CG-40



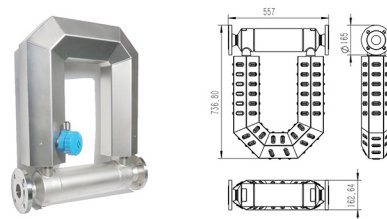
Model no.	CG-40
Mass accuracy grade	0.2
Max. flow rate	500kg/min
Temp. accuracy	$\pm 1^{\circ}\text{C}$
Zero stability	0.7kg/h
Repeatability	0.05%
MWP	4MPa
Nominal diameter	40mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	$\leq 95\%$ , non condensed
Loss of pressure	$\leq 0.2\text{MPa}$
Ex-mark	Ex[ib]IIBT1~T6 Gb / Ex[ib]IICT1~T6 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	845*740*450mm
G.W.	45kgs
Warranty	2 years



## Mass Flow Meter CG-50



Model no.	CG-50
Mass accuracy grade	0.2
Max. flow rate	1000 kg/min
Temp. accuracy	$\pm 1^{\circ}\text{C}$
Zero stability	1.2kg/h
Repeatability	0.02%
MWP	4MPa
Nominal diameter	50mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	$\leq 95\%$ , non condensed
Loss of pressure	$\leq 0.2\text{MPa}$
Ex-mark	Ex[ib]IIBT1~T6 Gb / Ex[ib]IICT1~T6 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	970*950*600mm
G.W.	70kgs
Warranty	2 years

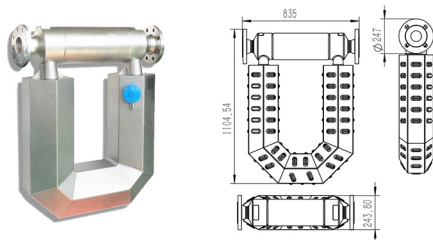




## Mass Flow Meter CG-80



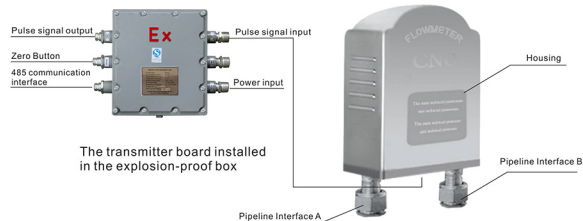
Model no.	CG-80
Mass accuracy grade	0.2
Max. flow rate	3000 kg/min
Temp. accuracy	±1°C
Zero stability	3kg/h
Repeatability	0.02%
MWP	4MPa
Nominal diameter	80mm
End connection	Flange, customizable
Fluid temperature	-200~200°C
Wetted parts	Stainless steel 316L
Sensor housing	Stainless steel 304
RH	≤95%, non condensed
Loss of pressure	≤0.2MPa
Ex-mark	Ex[ib]IIBT1~T6 Gb / Ex[ib]IICT1~T6 Gb
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Packing	1set/carton
Package size	1340*1300*1000mm
G.W.	130kgs
Warranty	2 years



## Transmitter



### Model F210

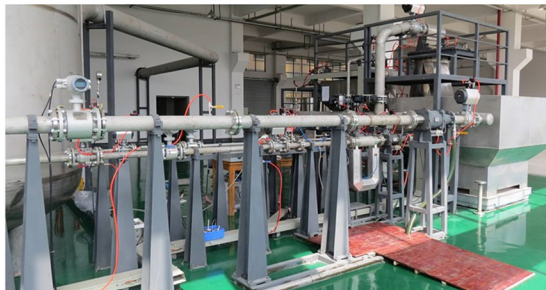


### Model F231

#### Specifications of transmitter

Temp. rating	-20°C~+50°C
RH	≤95%, non condensed
Atmospheric Pressure	86~106 kPa
Operating voltage	AC85~265V, DC12~28V
Communication port	RS485 Modbus RTU
Ex-mark	Exd[ib]IIBT4 Gb





## Application Scope

Mass flow meter can be applied to the following industries.

- Alternative Energy
- Oil & Gas
- Chemical
- Food & Beverage
- Industrial Energy
- Marine
- Power
- Pulp & Paper
- Refining
- Others

## Certificates



### Business license



### Calibration certificate



### Patent certificate



### Calibration certificate



### Explosion-proof certificate

