CHONGQING CHUANYI AUTOMATION CO.,LTD.



Please scan the QR code of Chongqing Chuanyi

QR code of Chuanyi Flowmeter

Address: No. 61, Middle Section of Huangshan Avenue,
Liangjiang New Area, Chongqing City, China
Sales hotline: 023-67032678
Tel.: 023-67032666
Technical support: 023-67032695 023-67032667
Fax: 023-67032676
Postal code: 401121
Website: www.cqcy.com
E-mail: flowmaster@sicflow.com.cn

CYAC ACCOMPAIES CUSTOMERSAND CUSTOMERS IN THE HEART OF CYAC

CORIOLIS MASS FLOWMETER

CHONGQING CHUANYI AUTOMATION CO., LTD. FLOWMETER BRANCH

March 2026, First Edition It is subject to change without notice!

Table of Contents

Chapter I Overview 1

1.1 Working principle 1

1.2 Features 1

1.3 Safety and protection 1

Chapter II Performance Indicators 2

2.1 Reference conditions 2

2.2 Accuracy and repeatability 2

2.3 Liquid flow 3

2.4 Zero stability 3

2.5 Range ratio 4

2.6 Process pressure grade 4

2.7 Secondary pressure-resistant enclosure 5

Chapter III Working Conditions 6

3.1 Ambient conditions 6

3.2 Ambient temperature 6

3.3 Process temperature 6

3.4 Process pressure influence 6

Chapter IV Converter 7

4.1 Converter CFT100 7

Chapter V Structural Parameters 8

5.1 Structural material 8

5.2 Dimension parameters 8

Ordering Information 11

Chapter I Overview

1.1 Working principle

This product is based on Coriolis principle. The flow tube through which the medium flows vibrates, thus causing Coriolis effect. The sensor can calculate the mass flow and density of the fluid by detecting and analyzing the changes of frequency, phase difference and amplitude of the flow tube.

See Fig. 1.

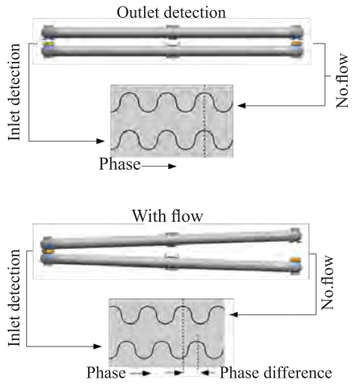


Fig. 1 Measurement Principle of Mass Flowmeter

The vibration frequency of the measuring tube of mass flowmeter changes with the density of the medium in the tube. By measuring the resonance frequency of the vibrating tube, the density of the medium can be obtained.

There is a precise temperature sensor inside the mass flowmeter, which can directly measure the temperature of the medium and output it. At the same time, temperature can also be used for internal compensation flow and density measurement.

1.2 Features

Our Coriolis mass flowmeters have excellent flow and density measurement performance, and can provide stable and accurate measurement results in liquid, gas and slurry flow measurement.

• Accurate multi-parameter measurement, including mass flow, volume flow, density and temperature measurement.

• Double U-shaped measuring tube, with high sensitivity.

• The converter is equipped with high-performance microprocessor and OLED display screen, and convenient and rapid setting of the parameters.

• The converter has self-checking and self-diagnosis functions.

• The measurement is not affected by changes in fluid density, viscosity and temperature.

• The product is not affected by installation and environment, and can maintain long-term stability.

•The installation is simple, and straight pipe section and rectification are not required.

• High-temperature, ultra-low-temperature and high-pressure applications are allowed.

• Ex explosion-proof type can be used in dangerous places.

The design, production, test, verification, transportation and storage of mass flowmeters of Chongqing Chuanyi Automation Co., Ltd. Flowmeter Branch shall be implemented according to the national standard GB/T 31130-2014 Coriolis Mass Flow Meter.



1.3 Safety and protection

• Converter certificate:
CFT100 explosion-proof mark: Ex d[ib] IIB T4 Gb
• Sensor certificate:
CFS series explosion-proof mark: Ex ib IIB/IIC T6...T1 Gb
IP grade: IP67

Chapter II Performance Indicators

2.1 Reference conditions

Reference conditions of instrument measurement performance: Water temperature is 15-25°C and water pressure is 0.2-0.3 MPa.

2.2 Accuracy and repeatability

2.2.1 Accuracy and repeatability of liquid measurement

Performance & specification	Option 1	Option 2	Option 3	Option 4
Mass flow accuracy	±0.1%	±0.15%	±0.2%	±0.5%
Mass flow repeatability	±0.05%	±0.075%	±0.1%	±0.25%
Density accuracy g/cm3	±0.002			
Density repeatability g/cm3	±0.001			
Temperature accuracy°C	±1			
Temperature repeatability°C	±0.2			

2.2.2 Accuracy and repeatability of gas measurement

Performance&specification	Option 1	Option 2
Mass flow accuracy	±0.5%	±0.75%
Mass flow repeatability	±0.25%	±0.35%
Temperature accuracy°C	±1	
Temperature repeatability°C	±0.2	

2.3 Liquid flow

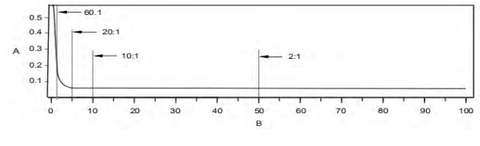
Model	Caliber	Maximum flow rate kg/h
CFS003	DN3	360
CFS006	DN6	1200
CFS015	DN15	4200
CFS020	DN20	7200
CFS025	DN25	12000
CFS040	DN40	32000
CFS050	DN50	60000
CFS080	DN80	180000
CFS100	DN100	300000
CFS150	DN150	600000

2.4 Zero stability

Model	Caliber	Zero stability kg/h
CFS003	DN3	0.01
CFS006	DN6	0.06
CFS015	DN15	0.13
CFS020	DN20	0.46
CFS025	DN25	0.71
CFS040	DN40	1.7
CFS050	DN50	2.4
CFS080	DN80	8.2
CFS100	DN100	12.3
CFS150	DN150	22

2.5 Range ratio

The following diagram shows an example of measurement characteristics under various flow conditions. If the flow requires a large range ratio (greater than 20:1), the zero stability value may be affected by the fluid conditions and the instruments used, thus affecting the performance.



A. Accuracy, %

B. Flow, %

2.6 Process pressure grade

The maximum working pressure of the sensor indicates the highest process pressure grade that can be achieved by a given sensor. The process connection type as well as the ambient temperature and process medium temperature may reduce this level.

Model	Maximum working pressure	
	Standard type MPa	High-pressure type Mpa
CFS003	4.0	11
CFS006	4.0	11
CFS015	4.0	25
CFS020	4.0	25
CFS025	4.0	11
CFS040	4.0	11
CFS050	4.0	11
CFS080	4.0	11
CFS100	4.0	11
CFS150	4.0	11

2.7 Secondary pressure-resistant enclosure

The mass flowmeter sensor enclosure can realize secondary pressure resistance and protection, and prevent dangerous media from leaking to the external environment to cause more serious accidents.

It meets the requirements of GB/T 20801 Pressure Piping Code - Industrial Piping and GB 50316 Design Code for Industrial Metallic Piping.

Model	Maximum enclosure pressure Mpa
CFS003	3.1
CFS006	3.1
CFS015	2.9
CFS020	2.5
CFS025	2.1
CFS040	2.0
CFS050	1.8
CFS080	1.5
CFS100	1.3
CFS150	1.1

Note: When the operating temperature is too high, the instrument needs to be depressurized for use. Please consult the sales representative for details.

Chapter III Working Conditions

3.1 Ambient conditions

Atmospheric pressure: 85kPa 106kPa
Ambient temperature: See Clause 3.2
Relative humidity: 5%~95% (non-condensing)

3.2 Ambient temperature

Generally, the sensor can be used in the medium temperature range shown in the table below.

Sensor type	Temperature range
Universal type	−70 ~ +200°C
Cryogenic type	-200 ~ +60°C
High-temperature type	-40 ~ +300°C

The working environment of the converter shall meet the following requirements.

Components	Category	Temperature range
Converter	Ambient temperature	-40 ~ +60 °C

3.3 Process temperature

For mass flow measurement, the influence of process temperature is defined as the change of sensor flow accuracy specification due to the deviation of process temperature from the calibration temperature.

For density measurement, the influence of process temperature is defined as the change of density accuracy specification due to the deviation of process temperature from the calibration temperature.

The zero-point calibration and intelligent instrument self-calibration tools can be used to correct all influence of process temperature.

3.4 Process pressure influence

The process pressure influence is defined as the change of mass flow and density accuracy of the sensor caused by the deviation of process pressure from the nominal pressure. The influence can be corrected by dynamic pressure input or fixed instrument coefficient. Consult the sales representative for details.

Chapter IV Converter

4.1 Converter CFT100

CFT100 is an electronic system with microprocessor as the core. It can provide driving force for the sensor and convert the sensor signal into mass flow signal and other signals. The brand-new digital signal processing technology and all-digital driving technology are adopted to greatly improve the processing of micro-flow micro-signal of flowmeter, and realize rapid signal processing and rapid response.

CFT100 converter is equipped with the industry-leading large OLED screen, with clear display, and ensures to continue to provide customers with stable parameter display and service at the low temperature of -40°C.



●Typical measurement parameters
Mass flow/total
Volume flow/total
Density
Temperature
● Intelligent functions
Instrument intelligent diagnosis
Bi-directional measurement
Coded lock
● Power options
85~265 VAC 50/60 Hz 10W
24VDC 10W
● Electrical interface
2 female threaded interfaces: NPT1/2
2 female threaded interfaces: M20
● Signal output (optional)
4~20mA current loop
0~10kHz frequency
Modbus RS485
HART
FF
● HMI
Chinese/English display
Status indication
Independent light-sensitive isolation button

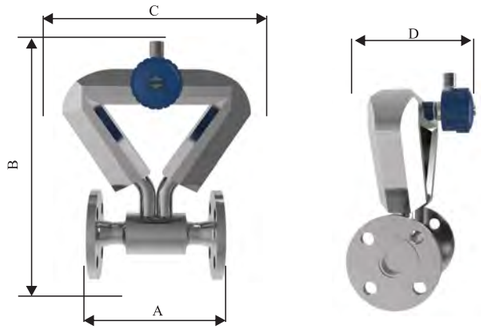
Chapter V Structural Parameters

5.1 Structural material

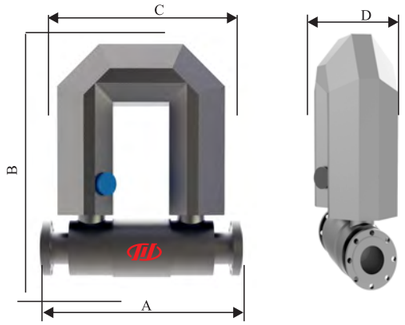
Category	Structure	Material
Wetted part	Measuring tube	Optional 316L stainless steel/Hastelloy
	Shunt support	Optional 304 stainless steel /316L stainless steel/Hastelloy
	Flange	Optional 304 stainless steel /316L stainless steel/Hastelloy
Enclosure	Sensor	304 stainless steel or 316L stainless steel
	Converter	Cast aluminum alloy (coated with epoxy polyurethane)
	Junction box	Cast aluminum alloy (coated with epoxy polyurethane)

5.2 Dimension parameters

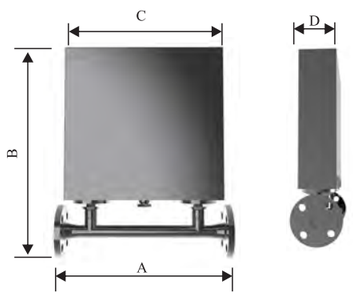
DN3-DN40



DN50-DN150



DN20



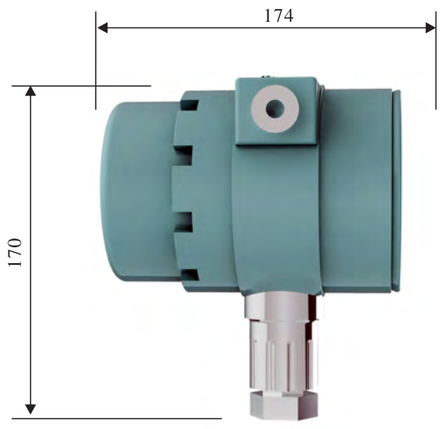
Overall dimensions of sensor

Model	Type	Caliber	Dimension (mm)			
			A	B	C	D
CFS003	Triangle	DN3	196	255	243	64
CFS006	Triangle	DN6	163	274	235	54
CFS015	Triangle	DN15	188	339	293	162
CFS020	U	DN20	332	401	301	101
CFS025	Triangle	DN25	211	538	448	117
CFS040	Triangle	DN40	262	636	576	227
CFS050	U	DN50	552	711	506	230
CFS080	U	DN80	731	893	653	278
CFS100	U	DN100	755	1162	709	345
CFS150	U	DN150	1020	1322	907	393

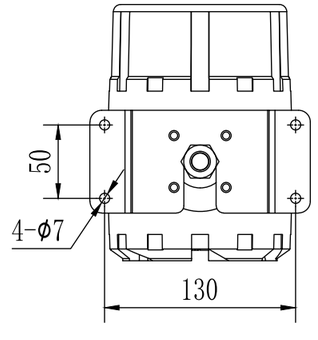
Note: Refer to HG/T20615-2009 PN40 RFWN flange for the above dimensions. Please consult the sales representative for details.

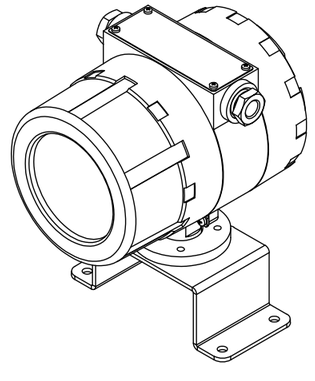
Overall dimensions of CFT100 converter

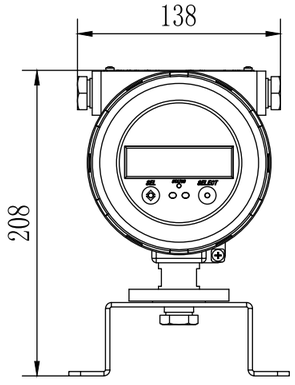


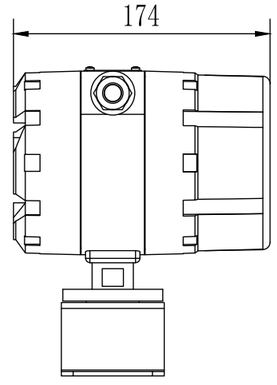


Split installation dimensions of converter









Note: The thickness of the support plate is 3mm.

Ordering Information

Selection Table of MFM-C Series Mass Flowmeters

Option description	Code	Code information description
Product main name □□□	MFMC	Diameter: DN3-DN300; three digits: the first and second digits of DN and the number of zeros following the first two digits (unit: mm).
Sensor model □	CFS003	(0 ~ 110)kg/h
	CFS006	(0 ~ 1200)kg/h
	CFS015	(0 ~ 3000)kg/h
	CFS020	(0 ~ 7200)kg/h
	CFS025	(0 ~ 12000)kg/h
	CFS040	(0 ~ 32000)kg/h
	CFS050	(0 ~ 60000)kg/h
	CFS080	(0 ~ 180000)kg/h
	CFS100	(0 ~ 300000)kg/h
	CFS150	(0 ~ 600000)kg/h
Sensor characteristics □	B	316L Temperature-resistant 200 body 316L cover 304
	C	316L Temperature-resistant 300 body 316L cover 304
	S	Special order (special material: 304L, Hastelloy C22, duplex stainless steel, tantalum)
Accuracy class □	1	Class 0.5
Process connection type □	1	GB/T 9115-2010 RF welding neck flange 4MPa WN-RF
	2	GB/T 9115-2010 RF welding neck flange 1.6MPa WN-RF
	3	GB/T 9115-2010 RF welding neck flange 6.3MPa WN-RF
	4	HG/T 20615-2009 RF welding neck flange Class300 WN-RF
	5	ASME B16.5-2009 RF welding neck flange Class150 WN-RF
	6	ASME B16.5-2009 RF welding neck flange Class300 WN-RF
	7	HG/T 20592-2009 RF welding neck flange 4MPa WN-RF
	8	HG/T 20592-2009 RF welding neck flange 1.6MPa WN-RF
	9	ASME B16.5-2009 RF welding neck flange Class600 WN-RF
	A	Threaded connection (DN15 and DN25 only)
	B	Threaded connection (DN15 and DN20 only) High-pressure type
	S	Special order
Sensor accessory □	Y	Heat tracing jacket
	X	XXX
Converter model □	CFT100	Chinese/English switching interface, IP67, Exd ib IIB T1-T6 Gb, shunt type
Electrical interfaceof converter powersupply and signal line□	M	M20
	N	1/2NPT
	S	T: Special order
Power supply mode □	1	18VDC-36VDC
	2	85VAC-265VAC

Option description	Code	Code information description
Communication and data acquisition mode□	1	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	2	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	3	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	4	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	S	Special order
Measurement mode□	A	Standard measurement type
	F	Undefined
Installation method □	Y	Integrated type (only for DN50 and above)
	F	Split type
Annex □	0	N/A
	1	Carbon steel flange, bolt and nut, and metal wound gasket
	2	304 stainless steel flange, bolt and nut, and metal wound gasket
	3	316L stainless steel flange, bolt and nut, and metal wound gasket
	S	9: Special order
Cable□	00	The cable length increases every 5m, with the default of 00(3m) and the longest of 95m.
Certification □	0	Factory verification certificate
	1	Verification certificate of national verification institution
	2	Verification certificate of third-party designated organization
	3	XXXX

Selection Table of MFM-N Series Mass Flowmeters

Option description	Code	Code information description
Product main name □□□	MFMN	Diameter: DN3-DN300; three digits: the first and second digits of DN and the number of zeros following the first two digits (unit: mm).
Sensor model □	CFS003	(0～110)kg/h
	CFS006	(0～1200)kg/h
	CFS015	(0～3000)kg/h
	CFS020	(0～7200)kg/h
	CFS025	(0～12000)kg/h
	CFS040	(0～32000)kg/h
	CFS050	(0～60000)kg/h
	CFS080	(0～180000)kg/h
	CFS100	(0～300000)kg/h
	CFS150	(0～600000)kg/h
Sensor characteristics □	B	316L Temperature-resistant 200 body 316L cover 304
	C	316L Temperature-resistant 300 body 316L cover 304
	S	Special order (special material: 304L, Hastelloy C22, duplex stainless steel, tantalum)
Accuracy grade □	2	Class 0.2
	3	Class 0.15
Process connection type □	1	GB/T 9115-2010 RF welding neck flange 4MPa WN-RF
	2	GB/T 9115-2010 RF welding neck flange 1.6MPa WN-RF
	3	GB/T 9115-2010 RF welding neck flange 6.3MPa WN-RF
	4	HG/T 20615-2009 RF welding neck flange Class300 WN-RF
	5	ASME B16.5-2009 RF welding neck flange Class150 WN-RF
	6	ASME B16.5-2009 RF welding neck flange Class300 WN-RF
	7	HG/T 20592-2009 RF welding neck flange 4MPa WN-RF
	8	HG/T 20592-2009 RF welding neck flange 1.6MPa WN-RF
	9	ASME B16.5-2009 RF welding neck flange Class600 WN-RF
	A	Threaded connection (DN15 and DN25 only)
	B	Threaded connection (DN15 and DN20 only) High-pressure type
	S	Special order
Sensor accessory □	Y	Heat tracing jacket
	X	XXX
Converter model□	CFT100	Chinese/English switching interface, IP67, Exd ib IIB T1-T6 Gb, shunt type
Electrical interface of converter power supply and signal line□	M	M20
	N	1/2NPT
	S	T: Special order
Communication and data acquisition mode □	1	18VDC-36VDC
	2	85VAC-265VAC

Option description	Code	Code information description
Communication and data acquisition mode □	1	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	2	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	3	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	4	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	S	Special order
Measurement mode □	A	Standard measurement type
	F	Undefined
Installation method □	Y	Integrated type (only for DN50 and above)
	F	Split type
Annex □	0	N/A
	1	Carbon steel flange, bolt and nut, and metal wound gasket
	2	304 stainless steel flange, bolt and nut, and metal wound gasket
	3	316L stainless steel flange, bolt and nut, and metal wound gasket
	S	9: Special order
Cable□	00	The cable length increases every 5m, with the default of 00(3m) and the longest of 95m.
Certification □	0	Factory verification certificate
	1	Verification certificate of national verification institution
	2	Verification certificate of third-party designated organization
	3	XXXX

Selection Table of MFM-P Series Mass Flowmeters

Option description	Code	Code information description
Product main name □□□	MFMP	Diameter: DN3-DN300; three digits: the first and second digits of DN and the number of zeros following the first two digits (unit: mm).
Sensor model □	CFS003	(0～110)kg/h
	CFS006	(0～1200)kg/h
	CFS015	(0～3000)kg/h
	CFS020	(0～7200)kg/h
	CFS025	(0～12000)kg/h
	CFS040	(0～32000)kg/h
	CFS050	(0～60000)kg/h
	CFS080	(0～180000)kg/h
	CFS100	(0～300000)kg/h
	CFS150	(0～600000)kg/h
Sensor characteristics □	B	316L Temperature-resistant 200 body 316L cover 304
	C	316L Temperature-resistant 300 body 316L cover 304
	S	Special order (special material: 304L, Hastelloy C22, duplex stainless steel, tantalum)
Accuracy grade □	4	Class 0.1
Process connection type □	1	GB/T 9115-2010 RF welding neck flange 4MPa WN-RF
	2	GB/T 9115-2010 RF welding neck flange 1.6MPa WN-RF
	3	GB/T 9115-2010 RF welding neck flange 6.3MPa WN-RF
	4	HG/T 20615-2009 RF welding neck flange Class300 WN-RF
	5	ASME B16.5-2009 RF welding neck flange Class150 WN-RF
	6	ASME B16.5-2009 RF welding neck flange Class300 WN-RF
	7	HG/T 20592-2009 RF welding neck flange 4MPa WN-RF
	8	HG/T 20592-2009 RF welding neck flange 1.6MPa WN-RF
	9	ASME B16.5-2009 RF welding neck flange Class600 WN-RF
	A	Threaded connection (DN15 and DN25 only)
	B	Threaded connection (DN15 and DN20 only) High-pressure type
	S	Special order
Sensor accessory □	Y	Heat tracing jacket
	X	XXX
Converter model□	CFT100	Chinese/English switching interface, IP67, Exd ib IIB T1-T6 Gb, shunt type
Electrical interface of converter power supply and signal line □	M	M20
	N	1/2NPT
	S	T: Special order
Power supply mode□	1	18VDC-36VDC
	2	85VAC-265VAC

Option description	Code	Code information description
Communication and data acquisition mode □	1	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	2	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	3	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	4	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	S	Special order
Measurement mode □	A	Standard measurement type
	F	Undefined
Installation method □	Y	Integrated type (only for DN50 and above)
	F	Split type
Annex □	0	N/A
	1	Carbon steel flange, bolt and nut, and metal wound gasket
	2	304 stainless steel flange, bolt and nut, and metal wound gasket
	3	316L stainless steel flange, bolt and nut, and metal wound gasket
	S	9: Special order
Cable□	00	The cable length increases every 5m, with the default of 00(3m) and the longest of 95m.
Certification □	0	Factory verification certificate
	1	Verification certificate of national verification institution
	2	Verification certificate of third-party designated organization
	3	XXXX

Selection Table of MFM-L Series Mass Flowmeters

Option description	Code	Code information description
Product main name □□□	MFML	Diameter: DN3-DN300; three digits: the first and second digits of DN and the number of zeros following the first two digits (unit: mm).
Sensor model □	CFS003	(0～110)kg/h
	CFS006	(0～1200)kg/h
	CFS015	(0～3000)kg/h
	CFS020	(0～7200)kg/h
	CFS025	(0～12000)kg/h
	CFS040	(0～32000)kg/h
	CFS050	(0～60000)kg/h
	CFS080	(0～180000)kg/h
	CFS100	(0～300000)kg/h
	CFS150	(0～600000)kg/h
Sensor characteristics □	D	316L Cryogenic-200cC (body 316L, cover 304)
	S	Special order (special material: 304L, Hastelloy C22, duplex stainless steel, tantalum)
Accuracy grade □	1	Class 0.5
	2	Class 0.2
	3	Class 0.15
	4	Class 0.1
Process connection type □	1	GB/T 9115-2010 RF welding neck flange 4MPa WN-RF
	2	GB/T 9115-2010 RF welding neck flange 1.6MPa WN-RF
	3	GB/T 9115-2010 RF welding neck flange 6.3MPa WN-RF
	4	HG/T 20615-2009 RF welding neck flange Class300 WN-RF
	5	ASME B16.5-2009 RF welding neck flange Class150 WN-RF
	6	ASME B16.5-2009 RF welding neck flange Class300 WN-RF
	7	HG/T 20592-2009 RF welding neck flange 4MPa WN-RF
	8	HG/T 20592-2009 RF welding neck flange 1.6MPa WN-RF
	9	ASME B16.5-2009 RF welding neck flange Class600 WN-RF
	A	Threaded connection (DN15 and DN25 only)
	B	Threaded connection (DN15 and DN20 only) High-pressure type
	S	Special order
Converter model□	CFT100	Chinese/English switching interface, IP67, Exd ib IIB T1-T6 Gb, shunt type
Electrical interface of converter power supply and signal line□	M	M20
	N	1/2NPT
	S	T: Special order
Power supply mode □	1	18VDC-36VDC
	2	85VAC-265VAC

Option description	Code	Code information description
Communication and data acquisition mode□	1	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	2	Active circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	3	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+RS485
	4	Passive circulating current (4 ~ 20)mA+frequency (0 ~ 10)kHz+HART
	S	Special order
Measurement mode □	A	Standard measurement type
	F	Undefined
Installation method □	Y	Integrated type (only for DN50 and above)
	F	Split type
Annex □	0	N/A
	1	Carbon steel flange, bolt and nut, and metal wound gasket
	2	304 stainless steel flange, bolt and nut, and metal wound gasket
	3	316L stainless steel flange, bolt and nut, and metal wound gasket
	S	9: Special order
Cable□	00	The cable length increases every 5m, with the default of 00(3m) and the longest of 95m.
Certification □	0	Factory verification certificate
	1	Verification certificate of national verification institution
	2	Verification certificate of third-party designated organization
	3	XXXX

CYAC ACCOMPAIES CUSTOMERSAND CUSTOMERS IN THE HEEART OF CYAC