

## **High-Performance Coriolis Flow Meters**

# **CamCor™ CT Series Meters**

GENERAL SPECIFICATION 50284154, Rev. 01

## **GENERAL**

Equipped with a sophisticated transmitter (including extensive diagnostics, a large display, and field configurability via keypad), the Cameron CT Series are high-performance Coriolis flow meters capable of mass flow measurement with a high degree of accuracy. Particularly worth noting are its uses in non-routine flow rate measurement, including measurement of extra low-volume flows, short-duration filling processes, etc.

## **FEATURES**

- Outstanding zero stability performance
- High-accuracy density: ±0.0005 g/mL (Models CC003 to CC250)
- Fast response and calculation frequency (approximately 10 ms)
- Dual independent pulse outputs, dual independent analog outputs, one status input and one status output
- Configurable via keypad or digital communications
- Extensive self-diagnostic capabilities (cable faults, pipeline vibration, transmitter temperature monitoring, etc.)
- Enhanced maintenance functions (error logging and downloads, recoverable factory configuration and calibration, etc.)
- Two user-assignable alarms
- Compatible with HART and Modbus communication protocols

## **UNITS**

The specifications for the CT Series meters are presented in both U.S. customary units and metric units. For U.S. customary units, see page 2 through page 22. For metric units, see Appendix A: Metric Units, page A-1.

## **ADDITIONAL INFORMATION**

To view available product configurations and to request additional information, see Appendix B, beginning on page B-1.



#### **GENERAL PERFORMANCE**

#### **Flow Rate**

Matantana	M I - I	Size	Guaranteed	Minimum	Maximum	Maximum	Accura	acy <b>5</b>	Repeata	Repeatability 6		Analog
Meter type	Model	(in.)	minimum rate (lb/min)	setting rate (lb/min)	service rate (lb/min)	allowable rate (lb/min)	Liquids	Gases	Liquids	Gases	stability (lb/min)	output accuracy
Low-flow	CC00A	4/4	0.00088	0.0044	0.088	0.132	[±0.2% ±ZS]		[±0.05%		1.32	
	CC001	1/4	0.0033	0.0165	0.33	0.496	of reading		±1/2 ZS] of reading	g	4.96	
	CC003	3/8	0.026 (0.033)	0.13	2.65	5.29 (6.61)					6.61	
	CC006	3/8	0.132	0.66	13.23	26.46		[±0.5% ±ZS]		[±0.25%	0.00066	
	CC010	1/2	0.44	2.2	44.09	88.18		of reading		±1/2 ZS]	0.0022	
	CC015	1/2	1.32	6.61	132	265	±0.1%		±0.05%	of reading	0.0066	
Standard	CC025	1	3.97	19.8	397	794	of reading		of reading (3)	3	0.0198	
and Low-	CC040	1-1/2	44.00	74.7	4400	2000	2				0.074	
temperature	CC050	2	14.33	71.7	1433	2866					0.071	
	CC080	3	44.09	220	4409	8818					0.22	
	CC100	4	400	000	40500	05400			[±0.05% ±1/2 ZS] of reading	_	0.000	Accuracy
	CC150	6	126	628	12566	25133					0.628	±0.1% of full
	CC15H	6	0.5-5	1000	05=04		[±0.1% ±ZS]				4 000	scale
	CC200	8	257	1286	25721	51441	of reading	_			1.286	
	CC20H	8		0.550		400000	•				0.550	1
	CC250	10	514	2572	51441	102883					2.572	
High- pressure	CC010	3/8	0.88	4.41	30.86	61.73	[±0.2% ±ZS] of reading	[±0.5% ±ZS]	[±0.1% ±1/2 ZS]	[±0.25% ±1/2 ZS]	0.0077	1
	CC015	3/4	2.87	14.33	93.7	187	6	of reading	of reading	of reading	0.0234	
High-	CC025	1	3.97	19.8	397	794					0.0396	1
temperature	CC040	1-1/2	14.33	71.7	1433	2866					0.143	
	CC050	2	14.33	7 1.7	1433	2000	[±0.1% ±ZS]	_	[±0.05%		0.143	
	CC080	3	44.09	220	4409	8818	of reading		±1/2 ZS] of reading	_	0.441	
	CC100 CC150	4 6	126	628	12566	25133					1.257	

- When a maximum allowable range 6.61 lb/min is adopted, the minimum flow rate is 0.033 lb/min.
- 2 ±ZS is applied for flow rates below 5% ( 2.5% for Model CC003) of the maximum service rate (within the guaranteed flow range).
- 1/2 ZS is applied for flow rates below 5% (2.5% for Model CC003) of the maximum service rate (within the guaranteed flow range).
- 4 If an accuracy of ±0.1% of reading is required, consult Cameron.
- 6 Above maximum service flow rate, the accuracy is [±0.3% ±ZS] of reading
  - If you request volume flow measurement for the purpose of fiscal transactions or weights and measurements transactions, contact Cameron.
  - In gas measurement, the maximum permissible flow velocity varies with the type of gas and some may be beyond the bounds of measurement. If so, contact Cameron.
  - ZS = Zero stability error (During testing, zero stability and current flow rate should be read in the same measurement unit.)

Zero stability error =  $\underbrace{\hspace{1cm}}^{\hspace{1cm}}$  Zero stability  $\times$  100% Current flow rate

Volumetric Flow Rate **0** 

Model	Units	Guaranteed	Minimum	Maximum	Maximum	
Wiodei	Units	minimum rate	setting rate	service rate	allowable	
CC00A	gal/hr	0.006	0.032	0.635	0.952	
CC001	gal/hr	0.023	0.119	2.38	3.57	
CC003	gal/hr	0.19	0.952	19.04	38.07	
CC006	gal/min	0.016	0.08	1.58	3.17	
CC010	gal/min	0.053	0.264	5.28	10.6	
CC015	gal/min	0.159	0.793	11.5	31.7	
CC025	gal/min	0.476	2.38	47.6	95.2	
CC040	gal/min	4.70	0.50	470	344	
CC050	gal/min	1.72	8.59	172	544	
CC080	bbl/hr	7.55	37.8	755	1511	
CC100	bbl/hr	21.5	108	2153	4306	
CC150	bbl/hr	21.5	100	2100	4300	
CC15H	bbl/hr	44.1	220	4407	8813	
CC200	bbl/hr	44.1	220	4407	0013	
CC20H	bbl/hr	00.4	444	0040	47007	
CC250	bbl/hr	88.1	441	8813	17627	
CC010*	gal/min	0.106	0.529	3.7	7.4	
CC015*	gal/min	0.344	1.719	11.2	22.5	

<sup>\*</sup> High-pressure models

Calculations based on water (specific gravity of 1) at 59°F (mass = 62.37 lb/ft³. Actual flow ranges vary with media density. To determine the flow range for your fluid, divide the values above by the fluid's specific gravity.

Density (Liquids)

Meter type	Model	Size	Metering	Accuracy	Analog output	
weter type	Wodei	(in.)	range	(Option)	accuracy	
Low-flow	CC00A	1/4		±0.003 g/mL		
	CC001	1/4		10.003 g/IIIL		
	CC003	3/8				
	CC006	3/8				
	CC010	1/2				
	CC015	1/2				
Standard	CC025	1				
and Low-	CC040	1-1/2	0.3 to 2g/mL		Accuracy ±0.1%	
temperature	CC050	2	0.3 to 29/11L	±0.0005 g/mL	of full scale	
	CC080	3		±0.0003 g/IIIL		
	CC100	4				
	CC150	6				
	CC15H	6				
	CC200	8				
	CC20H	8				
	CC250	10				
High-	CC010	3/8	0.3 to 2 g/mL	±0.004 g/mL		
pressure	CC015	3/4	0.5 to 2 g/IIIL	10.004 g/IIIL		
High-	CC025	1				
temperature	CC040	1-1/2			Accuracy ±0.1%	
	CC050	2	0.3 to 2g/mL	±0.003g/mL	of full scale	
	CC080	3	0.5 to 29/11L	10.003g/IIIL		
	CC100	4				
	CC150	6				

## **Sensor Unit General Specifications**

#### Low-Flow Models (CC00A, CC001 and CC003)

	Item		Desci	ription				
Model		CC00A	CC001	CC003				
Nominal size		1/4		10 mm, 3/8" <b>①</b> , DN15				
Materials	Wetted parts	SUS3	16L	SUS316L, Hastelloy C22/SUS316L, Hastelloy C22 2				
	Housing		SUS304					
O-rings		Fluoro-elastomer (standar	d Viton®), PTFE (option)	_				
Process connection		1/4-18 F	FNPT	ANSI 100, 300, 600 RF; DIN PN 10, 16, 25, 40 RF <b>3</b> , IDF Ferrule <b>4</b> , 3/8-18 FNPT				
Applicable fluid			Liquid a	and gas				
Density range			0 to 2.0g/mL					
Temperature range			-328°F to 392°F <b>⑥</b>					
Tube withstand @ 68°I	=	_		Wetted parts materials: SUS316L maximum 1450 psig;				
Maximum operating	Liquid	2176 psi	at 68°F	Hastelloy C22 maximum 2176 psig				
pressure	Gas	142 p	osig	(depending on flange rating)				
Sensor housing withs	tand <b>5</b>			1044 psig				
Flow direction			Bidirectional					
Explosion-proof confi	guration	CSA, ATE	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)					
Dust-tight, waterproof	configuration		IP66/67					

- 1/2" for ANSI flanged sensors.
- When wetted parts are made from Hastelloy C22, only the threaded connection is available.
- DIN flanges are only available for meter materials SUS316L and SUS316L/C22.
- For application with foods, this product does not comply with CE marking.
- This pressure does not represent the rated test pressure of a pressure vessel. It represents 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.
- Refer to Explosion-proof Specifications, page 22 for details. In case of non-explosion-proof type, the maximum measurement temperature is 266°F. However, the product must be used within the maximum ambient temperature of 113°F. Higher temperature limits can be achieved with the high-temperature models.
  - Only available with separately-mounted transmitter and interconnect cable (ordered separately, 10-meter minimum, available in 5-meter increments thereafter).
  - For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

#### Standard Models (CC006 through CC080)

Ite	em		Description								
Model		CC006	CC010	CC015	CC025	CC040	CC050	CC080			
Nominal size		10 mm, 3/8" <b>1</b> , DN15	15 mm, 1/2″, DN15		25 mm, 1", DN25	40 mm, 1-1/2", DN40	50 mm, 2", DN50	80 mm, 3", DN80			
Materials Wetted parts			SUS316L, Hastelloy C22/SUS316L, Hastelloy C22								
Waterials	Housing				SUS304						
Process connection ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF 2; IDF Ferrule 3; Threaded											
Applicable fluids		Liquid and gas									
Density range		0 to 2.0 g/mL									
Temperature range		-328°F to 392°F <b>⑤</b>									
Tube withstand @ 68°I	=				1363 psig						
Maximum operating pr	essure		Depends on flange rating								
Sensor housing withst	and 4	551 psig	435 psig	319 psig	232 psig	261	psig	203 psig			
Flow direction		Bidirectional									
Explosion-proof config	guration	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)									
Dust-tight, waterproof	configuration		IP66/67								

- 1/2" for ANSI flanged sensors.
- 2 DIN flanges are only available for meter materials SUS316L and SUS316L/C22.
- For application with foods, this product does not comply with CE marking.
- This pressure does not represent the rated test pressure of a pressure vessel. It represents 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.
- Refer to Explosion-proof Specifications, page 22 for details. In case of non-explosion-proof type, the maximum measurement temperature is 266°F. However, the product must be used within the maximum ambient temperature of 113°F. Higher temperature limits can be achieved with the high-temperature models.
  - Available with either integrally-mounted or separately-mounted transmitter.
  - For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

## High-Flow Models (CC100 through CC250)

I	tem	Description									
Model	,	CC100	CC150	CC15H	CC200	CC250					
Nominal size		100 mm, 4", DN100	150 mm,	6", DN150	200 mm,	8", DN200	250 mm, 10", DN250				
Materials	Wetted parts			SUS	316L						
waterials	Housing		SUS304								
Process connection ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF											
Applicable fluids	•			Liq	uid						
Density range			0.3 to 2.0 g/mL								
Viscosity range				Maximum	10000 CP						
Temperature ran	ge			−328°F to	392°F <b>1</b>						
Tube withstand (	@ 68°F	1967	psig	1537	psig	12	76 psig				
Maximum operat	ing pressure			Depends on	flange rating						
Flow direction	direction Bidirectional										
Explosion-proof	configuration		CSA, ATEX, IEC	Ex (Refer to Explosion-	oroof Specifications, pa	age 22 for details.)					
Dust-tight, water	proof configuration	IP66/67									



Refer to Explosion-proof Specifications, page 22 for details. When flowing non-combustible product, the maximum media temperature is 266°F. However, the maximum ambient temperature is 113°F. Higher temperature limits can be achieved with the high-temperature models.

## **High-Pressure Models (CC010 and CC015)**

	Item	Descr	iption				
Model		CC010	CC015				
M-4:	Wetted parts	Flow tube: Hastelloy C22	; Manifold: Hastelloy C22				
Materials	Housing	SUS304					
Process connection	on	3/8-18 FNPT	3/4-18 FNPT				
Applicable fluid		Liquid and gas					
Density range		0.3 to 2.0 g/mL					
Temperature range	9	Integrally-mounted: -4°F to 194°F; Separately-mounted: -328°F to 392°F					
Maximum operatin	ng pressure (at room temperature)	5221 psig	6237 psig				
Sensor housing w	ithstand <b>①</b>	435 psig	319 psig				
Flow direction		Bidirectional					
Explosion-proof configuration		CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)					
Dust-tight, waterpi	roof configuration	IP66/67					



This pressure does not represent the rated test pressure of a pressure vessel. It represents 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.

 $<sup>\</sup>bullet$  For products conforming to the high-pressure gas safety regulations, consult Cameron.

 $<sup>\</sup>bullet \ \ \text{For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.}$ 

## **High-Temperature Models (CC025 through CC150)**

	Item			Desci	ription					
Model		CC025	CC040	CC050	CC080	CC100	CC150			
Nominal size	,	25 mm, 1", DN25	40 mm, 1-1/2", DN40	50 mm, 2", DN50	80 mm, 3", DN80	100 mm, 4", DN100	150 mm, 6", DN150			
Materials Wetted parts			SUS316L		SUS316L, Hastelloy C22/ SUS316L, Hastelloy C22	SUS316L				
	Housing		SUS304							
Process connect	ion		1" to 3": ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF 4" and 6" : ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40RF							
Applicable fluids	i			Lic	juid					
Density range			0.3 to 2.0 g/mL							
Temperature ran	ge <b>①</b>			–40°F t	o 662°F					
Tube withstand (	@ 68°F		1363 psig 1958 psig							
Maximum operat	ing pressure		Dependent on flange rating							
Sensor housing	withstand <b>2</b>	232 psig	261	psig	203 psig	_				
Flow direction			Bidirectional							
Explosion-proof	configuration		CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)							
Dust-tight, water	proof configuration		IP66/67							

# Optional Heat Tracer Specifications (Available for Models CC025 through CC080)

Applicable fluids	Hot water, saturated steam, overheated steam			
Heat retention fluid maximum output pressure	142 psig			
Joint port for heat retention fluid	10 mm stainless tubing			
Recommended joint	Standard stainless steel ferrule-type compression fitting for 10mm tubing			

- Allowable ambient temperature permitted for the sensor unit is up to 122°F.
- This pressure does not represent the rated test pressure of a pressure vessel. It represents 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.
- Heat trace should only be used for heating the meter. Do not use for cooling of flowing media.
  - For products conforming to the high-pressure gas safety regulations, consult Cameron.
  - Only available with separately-located transmitter and interconnect cable (ordered separately, 10-meter minimum, available in 5-meter increments thereafter).

## Low-Temperature Models (CC025 through CC250)

Ite	em	Description									
Model		CC025	CC040	CC050	CC080	CC100	CC150	CC15H	CC200	CC20H	CC250
Nominal size		25 mm, 1", DN25	40 mm, 1-1/2", DN40	50 mm, 2", DN50	80 mm, 3", DN80	100 mm, 4", DN100	, , ,			mm, N200	250 mm, 10", DN250
Matariala	Wetted parts		SUS316L, H	astelloy C22				SUS	316L		
Materials Housing SUS304											
Process connection	on <b>①</b>	ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF <b>2</b> ; IDF Ferrule <b>3</b>				ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF					
Applicable fluids			Liquid a	and gas				Liq	uid		
Density range						0.3 to 2	.0 g/mL				
Temperature rang	е					−328°F t	to 122°F				
Tube withstand			1363 psi	g @ 68°F		1967 psi	g @ 68°F	1537 psig	at 104°F	1276 psi	g at 104°F
Maximum operatir	ng pressure					Dependent or	n flange rating				
Sensor housing w	ithstand <b>4</b>	232 psig	261	psig	203 psig			_	_		
Flow direction						Bidirectional					
Explosion-proof c	onfiguration	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)									
Dust-tight, waterp	roof configuration	IP66/67									

- When SUS316L is selected as the wetted parts material, the flange material will be SUS316.
- DIN flanges are only available for meter material SUS316L.
- For application with foods, this product does not comply with CE marking.
- This pressure does not represent the rated test pressure of a pressure vessel. It represents 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.
  - Only available with separately-mounted transmitter and interconnect cable (ordered separately; 10-meter minimum, available in 5-meter increments thereafter).
  - For products conforming to the high-pressure gas safety regulations and CE marking, consult Camoeron.

# **Transmitter Specifications**

Item		Description				
Model		PA0K				
Power supply		85 to 264 VAC, 50/60 Hz or 20 to 30 VDC				
,	(Safety rated 100 to 240 VAC, 50/60 Hz)					
Power consumption		Maximum 15W				
Ambient temperature		–40°F to 131°F <b>①</b>				
Transmission length (separately-mounted)	Maximum 656 ft. 2					
Applicable EU directive		EMC Directive: 2004/108/EC; ATEX Directive: 94/9/EC				
Applicable EN standards	EMC—EN55011: 1998/A1, 1999/A2, 2002 Group 1, Class B; EN61000-6-2: 2001; EN061326-1: 2006 ATEX—EN60079-0: 2012; EN60079-1: 2007; EN60079-11: 2012 IECEx—IEC60079-0: 2011; IEC60079-1: 2007-04; IEC60079-11: 2011					
Explosion-proof configuration	CS	A, ATEX, IECEx (Refer to Explosion-proof Specifications, page 22 for details.)				
Dust-tight, waterproof configuration	IP66/67					
Transmitter configuration		Integral or separately-mounted				
Finish		Paint type: Baked enamel; Paint color: Light gray (RAL7035)				
Display	LCD display provide	d (128×64 dots), backlit (white, orange); Two infrared light sensors; Two LEDs (green and red)				
Weight (approximate)		Integrally-mounted model, 7.94 lb; Separately-mounted model, 11.02 lb				
Communication interface <b>5</b>	HART (Standard)	Protocol Version 7, Bell 202				
Communication interface	Modbus (Optional)	RS-485: Baud rate: 9600 bps, 19200 bps, 38400 bps; RTU or ASCII; Response time: 25 to 50 ms				
Damping (default)		Flow rate, 0.8 sec.; Density, 4.0 sec.; Temperature, 2.5 sec.				
Low-flow cutoff (default)		Less than 0.6% of maximum service flow rate				
Pulse output	'	ain (equivalent to open collector): 10V to 30V, 50 mADC, ON resistance ≤0.6 Ω OR 1.5V maximum (low level) to 13V minimum (high level), output impedance: 2.2 kΩ; Setting range: 0.1 to 10000 Hz (Maximum: 11000 Hz)				
Analog output	4 to 20 mADC (maximum load: $600~\Omega$ ); Select two outputs from instant flowrate (mass or volume) temperature, and density.					
Status output	Open drain (equivalent to open collector)—30V maximum, 50 mADC, ON resistance ≤0.6 Ω; Select one from error (default) ④, flow direction, or high/low alarm					
Status input	Conta	act-closure (Form "a" contact): 200 $\Omega$ maximum (short), 100 k $\Omega$ minimum (open); Select one output from remote zero, total reset, 0% signal lock, or function off (default)				

Below –4°F, the display loses its visibility due to weakened contrast. Both the display and infrared sensor may exhibit slow responses below –4°F. If the sensor-to-transmitter communications cable length exceeds 656 feet, consult Cameron.

Of the two analog output systems, only Analog Output 1 is available for HART communication.

The status output can also be configured to activate when meter zeroing is in process.

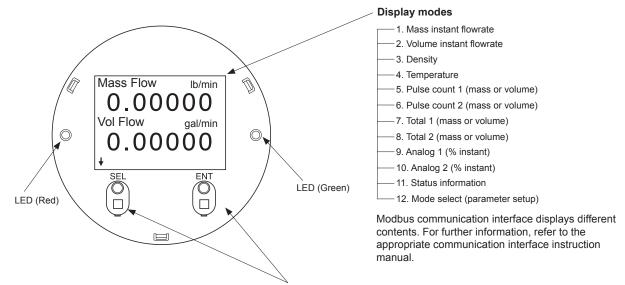
Electrical noise filtering components are installed in connections between power source, output, communications, and chassis.

#### **EXTERNAL APPEARANCE**

## **CT Series Models**

	Low-flow and S	tandard Models	High-pressure Model	High-temperature Model	Low-temperature Model	
CC00A, CC001	CC003	CC006 to CC080	CC100 to CC250	CC010, CC015	CC025 to CC150	CC025 to CC250
1/4"	3/8"	3/8" to 3"	4" to 10"	3/8" and 3/4"	1" to 6"	1" to 10"

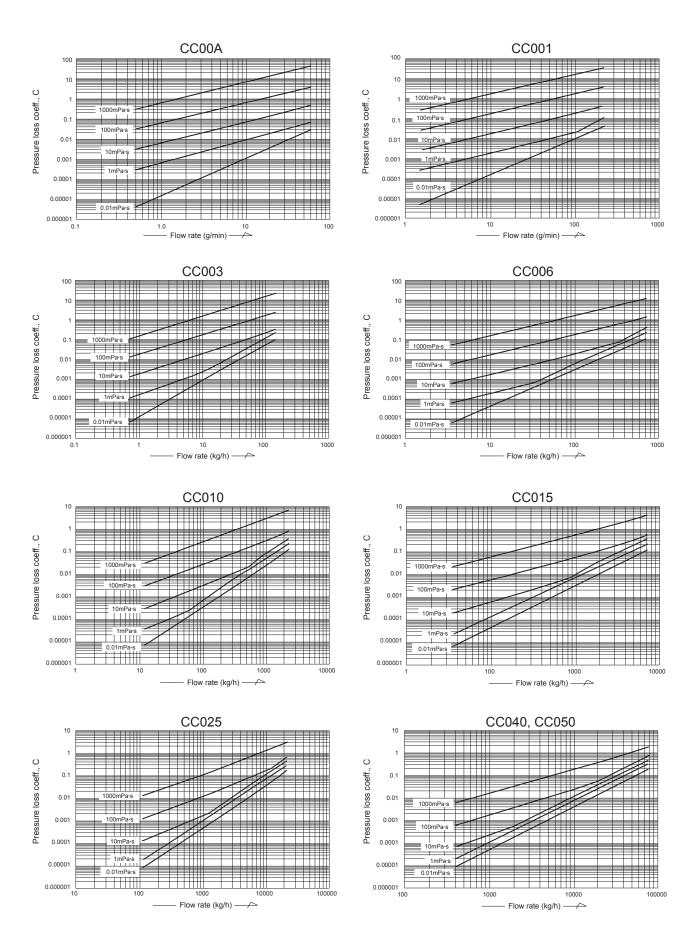
# **Display**



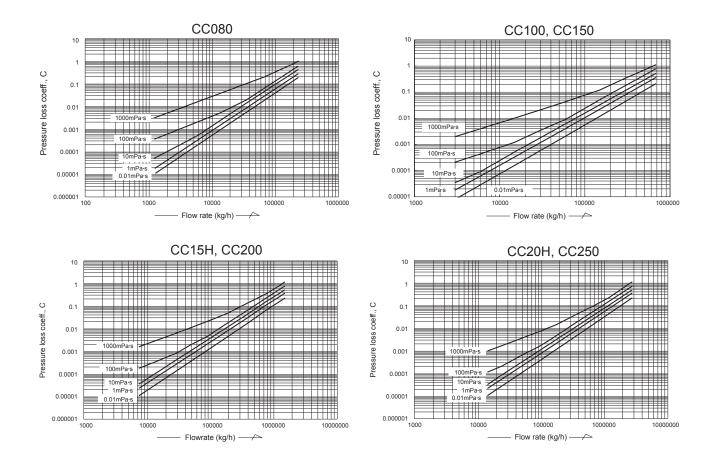
- LCD backlight available in white and orange. Color changes according to the status of flow meter.
- In most cases, the backlight shuts off automatically if the optical sensor does not respond within a userdefined duration.

To select the mode, touch the infrared optical sensor panel through the front glass.

## **PRESSURE LOSSES**



## **PRESSURE LOSSES**



## How to determine pressure loss

1. Find the pressure loss factor "C" for a given parameter from its flow rate (kg/h or g/min) and viscosity (mPa·s), then divide "C" by specific gravity "d" ("1" for water) as shown in the following formula:

$$\Delta P = \frac{C}{d} (MPa)$$

\*For high viscosity liquids not shown in these graphs, calculate the pressure loss using the following formula:

$$\Delta P2 = C \times \frac{\mu 2}{\mu 1} \times \frac{1}{d}$$

where  $\Delta P2$  = Pressure loss of high viscosity liquid (MPa)

 $\mu$ 1 = Maximum viscosity shown in the graph (mPa·s)

μ2 = Viscosity of high-viscosity liquid (mPa·s)

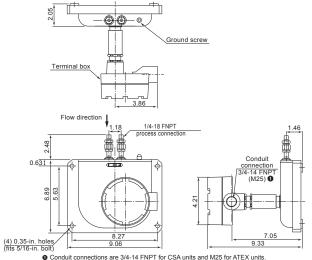
d = Specific gravity of high-viscosity liquid ("1" for water)

C = Pressure loss factor

Sensor unit: CC00A and CC001

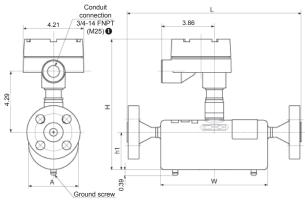
Transmitter: Separately-mounted/threaded connection type

(Approximate weight: 20 lb)



Sensor unit: CC003

Transmitter: Separately-mounted/flange connection type



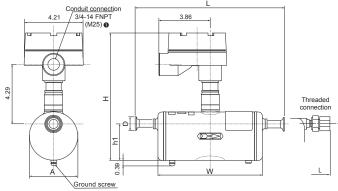
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI				DIN						Approx.
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	Н	h1	Α	w	Weight
	(in.)		L		(DN)	ı						(lb)
CC003	1/2	11.9	12.2	12.7	15	10.8	11.1	9.06	2.64	3.51	7.56	11

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC003

# Transmitter:27 Separately-mounted/ferrule or threaded connection type



Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

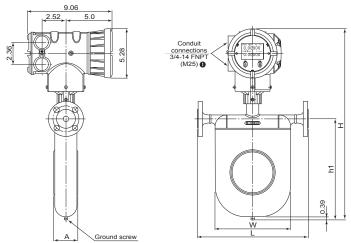
Model	Fer		ш	h1		w	_	Approx.	
wodei	Nominal size	Connection 2	_	п	nı	A	VV	U	Weight (lb)
CC003	10	Ferrule 10A	10.49	9.06	2.64	3.51	7.56	1.34	9.92

Model	Threaded Connection	L	Approx. Weight (lb)
CC003	3/8-18 FNPT	13.1	9.92

<sup>2</sup> Process connection: A = mm

Sensor unit: CC006 through CC080

Transmitter: Integrally-mounted/flange connection type



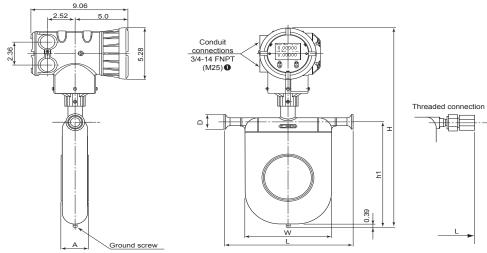
Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units

		ANSI				DIN						
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	Н	h1	Α	w	Approx. Weight (lb)
	(in.)	(in.)		(DN) L							weight (ib)	
CC006	1/2	10.6	10.9	11.4	15	9.49	9.72	16.7	7.09	2.09	5.83	15.4
CC010	1/2	11.1	11.5	11.9	15	10.1	10.3	18.2	8.58	2.09	6.42	17.2
CC015	1/2	12.8	13.1	13.7	15	11.8	12	20.2	10.6	2.56	8.07	19.4
CC025	1	16.2	16.7	17.2	25	14.8	15	22.8	13	3.27	10.3	29.3
CC040	1-1/2	21.5	22	22.6	40	20	20.2	-00	47.0	4.70	45.0	50.7
CC050	2	21.7	22.2	22.9	50	20.2	20.4	28	17.8	4.76	15.2	50.7
CC080	3	27.5	28.2	29	80	25.9	26.6	34.6	23.7	6.85	20.1	125.7

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

# Sensor unit: CC006 through CC080

# Transmitter: Integrally-mounted/ferrule or threaded connection type



Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

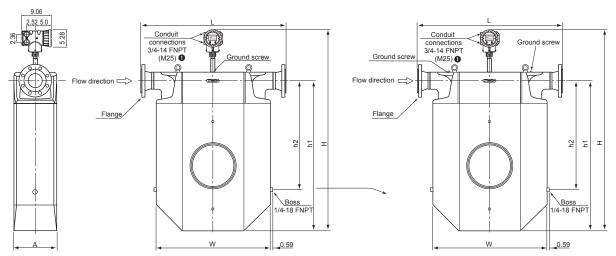
Madal		Ferrule	١.	н	h1		w	_	Approx.
Model	Nominal size	Connection 2	L	п	nı	Α	VV	D	Weight (lb)
CC006	10	Ferrule 10A	9.11	17.1	7.09	2.09	5.83	1.34	12.6
CC010	15	Ferrule 15A	10.1	18.2	8.58	2.09	6.42	1.34	13.9
CC015	15	Ferrule 15A	11.4	20.2	10.6	2.56	8.07	1.34	15.7
CC025	25	Ferrule 25 (ISO), IDF 1S	14.6	22.8	13	3.27	10.3	1.99	23.6
CC040	40	Ferrule 38 (ISO), IDF 1.5S	40.4	28	17.8	4.76	45.0	1.99	44.0
CC050	50	Ferrule 51 (ISO), IDF 2S	19.4	28	17.8	4.76	15.2	2.52	41.9
CC080	80	80 Ferrule 76.1 (ISO), IDF 3S		34.6	23.7	6.85	20.1	3.58	112.4

Model	Threaded Connection	L	Approx. Weight (lb)
CC006	3/8-18 FNPT	11.7	12.6
CC010	3/8-18 FNPT	12.3	13.9
CC015	3/4-14 FNPT	15	15.7

<sup>2</sup> Process connection: A = mm, S (sanitary) = in.

Sensor unit: CC100 through CC250

Transmitter: Integrally-mounted/flange connection type



Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

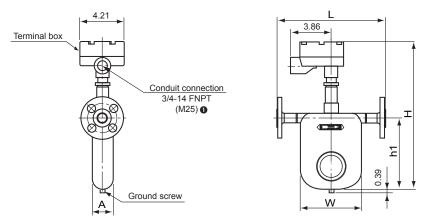
(CC100, CC150)

(CC15H through CC250)

Model	FI	ange	L	н	h1	h2		w	Approx.
wodei	Nominal size	Flange rating		п	nı	nz	Α		Weight (lb)
		ANSI 150	40.1						
	4"	ANSI 300	40.8						
CC100		ANSI 600	42.6	55.2	40	26	11.8	31.9	509
	DNI400	PN 10, 16	38.1						
	DN100	PN 25, 40	39.1						
		ANSI 150	51.9						
	6"	ANSI 300	52.7						
CC150		ANSI 600	54.6	55.2	40	26	11.8	31.9	542
	DN150	PN 10, 16	49.2						
	טפו אום	PN 25, 40	50.8						
		ANSI 150	42.8					31.9	683
	6"	ANSI 300	43.6						
CC15H		ANSI 600	45.6	63.1	46.9	33.5	12.6		
	DN150	PN 10, 16	40.1						
	DIVISO	PN 25, 40	41.7						
	8"	ANSI 150	55.8	63.1					
		ANSI 300	56.6		46.9	33.5	12.6	31.9	750
CC200		ANSI 600	58.8						
CC200		PN 10, 16	52.7	03.1		33.3	12.0	31.9	750
	DN200	PN 25	54.1						
		PN 40	54.7						
	8"	ANSI 150	55.8						
	0	ANSI 300	56.6						
CC20H		PN 10, 16	52.7	72	54.7	37.8	16.5	43.7	1345
	DN200	PN 25	54.1						
		PN 40	54.7						
	10"	ANSI 150	69.8						
	10	ANSI 300	71.1						
CC250		PN 10	67.1	72	54.7	37.5	16.5	43.7	1433
00200	DN250	PN 16	67.3	_ '2	34.7	37.5	10.5	45.7	1433
	DIVZOU	PN 25	68.7						
		PN 40	70						

Sensor unit: CC006 through CC080

Transmitter: Separately-mounted/flange connection type



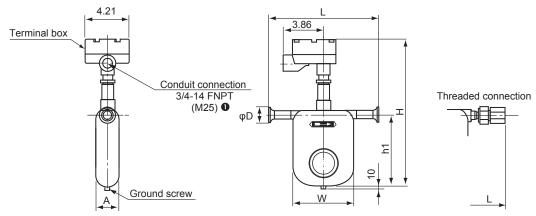
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI				DIN						Approx.
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	Н	h1	Α	w	Weight
	(in.)	L		(DN)	L						(lb)	
CC006	1/2	10.6	10.9	11.4	15	9.49	9.72	14.5	7.09	2.09	5.83	8.8
CC010	1/2	11.1	11.5	11.9	15	10	10.3	16	8.58	2.09	6.42	10.4
CC015	1/2	12.8	13.1	13.7	15	11.8	12	18	10.6	2.56	8.07	12.3
CC025	1	16.2	16.7	17.2	25	14.8	15	21	13	3.27	10.3	23
CC040	1-1/2	21.5	22	22.6	40	20	20.2	25.7	47.0	4.70	45.0	44.4
CC050	2	21.7	22.2	22.9	50	20.2	20.4	25.7	17.8	4.76	15.2	44.1
CC080	3	27.5	28.2	29	80	26	26.6	32.4	23.7	6.85	20.1	119

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

## Sensor unit: CC006 through CC080

## Transmitter separately-mounted/ferrule or threaded connection type



• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

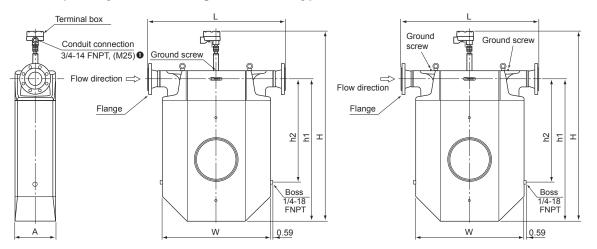
		Ferrule							Approx. Weight
Model	Nominal size	Connection 2	L	Н	h1	Α	W	φD	(lb)
CC006	10	Ferrule 10A	9.11	14.5	7.09	2.09	5.83	1.34	6.2
CC010	15	Ferrule 15A	10.1	16	8.58	2.09	6.42	1.34	7.5
CC015	15	Ferrule 15A	11.4	18	10.6	2.56	8.07	1.34	9.3
CC025	25	Ferrule 25 (ISO), IDF 1S	14.6	20.6	13	3.27	10.3	1.99	17.2
CC040	40	Ferrule 38 (ISO), IDF 1.5S	1	25.7	47.0	4.70	45.0	1.99	25.2
CC050	50	Ferrule 51 (ISO), IDF 2S	19.4	25.7	17.8	4.76	15.2	2.52	35.3
CC080	80	Ferrule 76.1 (ISO), IDF 3S	25.9	32.4	23.7	6.85	20.1	3.58	105.8

2 Process connection: A = mm, S (sanitary) = in.

Model	Threaded Connection	L	Approx. Weight (lb)
CC006	3/8-18 FNPT	11.7	6.2
CC010	3/8-18 FNPT	12.3	7.5
CC015	3/4-14 FNPT	15	9.3

Sensor unit: CC100 through CC250

Transmitter: Separately-mounted/flange connection type



• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

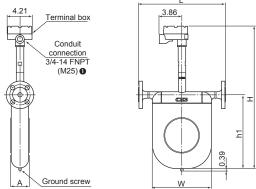
(CC100, CC150)

(CC15H through CC250)

		(00)	(CC100, CC150)			(CC15H through CC250)						
Model	FI	ange	L	н	h1	h2	Α	w	Approx.			
Wodel	Nominal size	Flange rating	] -	"	""	112	_ ^	, vv	Weight (lb)			
		ANSI 150	40.1									
	4"	ANSI 300	40.8									
CC100		ANSI 600	42.6	53.3	40	26	11.8	31.9	509			
	DN100	PN 10, 16	38.1									
	DIVIOU	PN 25, 40	39.1									
		ANSI 150	51.2									
	6"	ANSI 300	52.7									
CC150		ANSI 600	54.6	53.3	40	26	11.8	31.9	542			
	DNI1EO	PN 10, 16	49.2									
	DN150	PN 25, 40	50.8									
		ANSI 150	42.8						683			
	6"	ANSI 300	43.6									
CC15H		ANSI 600	45.6	61.2	46.9	33.5	12.6	31.9				
	DN150	PN 10, 16	40.1	]								
	DIVIDU	PN 25, 40	41.7									
	8"	ANSI 150	55.8					31.9				
		ANSI 300	56.6		40.0	33.5	12.6					
CC200		ANSI 600	58.8	61.2					750			
CC200		PN 10, 16	52.7	01.2	46.9	33.5	12.0	31.9	750			
	DN200	PN 25	54.1	]								
		PN 40	54.7	]								
	8"	ANSI 150	55.8									
	8	ANSI 300	56.6	1								
CC20H		PN 10, 16	52.7	70.1	54.7	37.8	16.5	43.7	1345			
	DN200	PN 25	54.1	]								
		PN 40	54.7									
	10"	ANSI 150	69.8									
	10	ANSI 300	71.1									
CCOEC		PN 10	67.1	70.1	E4.7	27.0	16.5	42.7	1422			
CC250	DNOEO	PN 16	67.3		54.7	37.8	16.5	43.7	1433			
	DN250	PN 25	68.7									
		PN 40	70									

Sensor unit: CC025 through CC080 (High-temperature models)

Transmitter: Separately-mounted/flange connection type

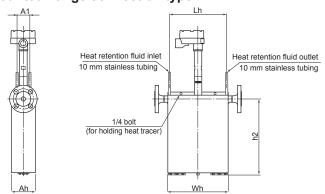


Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI				DIN						Approx.
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	Н	h1	Α	w	Weight (lb)
	(in.)		L		(DN)		L					Weight (ib)
CC025	1	16.2	16.7	17.2	25	14.8	15	25.1	12.3	3.27	10.3	24
CC040	1-1/2	21.5	22	22.6	40	20	20.2	20.0	17.8	4.70	45.0	44.8
CC050	2	21.7	22.2	22.9	50	20.2	20.4	30.2	17.8	4.76	15.2	45.6
CC080	3	27.5	28.2	29	80	25.9	26.6	37.8	23.7	6.85	20.1	119

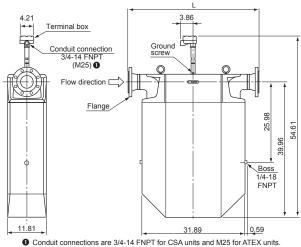
<sup>•</sup> DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC025 through CC080 (with heat tracer) Transmitter: Separately-mounted/flange connection type



Model	Nominal size (in.)	Heat Tracer Model Compatibility	Lh	h2	Ah	A1	Wh	Approx. Weight (lb)
CC025	1	HT1-025A	10	13.4	4.17	2.2	10.6	37.3
CC040	1-1/2	LIT4 040A	44.0	40.0	F 07	0.70	45.4	70.1
CC050	2	HT1-040A	14.8	18.3	5.67	2.76	15.4	71
CC080	3	HT1-080A	19.7	24.1	7.8	4.33	21.5	166

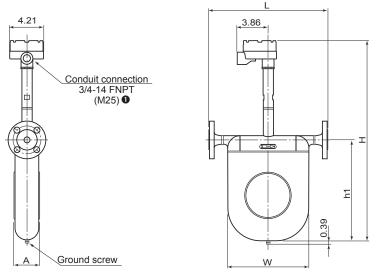
Sensor unit: CC100 and CC150 (High-temperature models) Transmitter: Separately-mounted/flange connection type



<u>'</u>	• For specifications of other flange ratings, see the approval drawing (or delivery specification).
	specification).

Madal		Flange		Approx. Weight
Model	Nominal size	Flange rating 0	L	(lb)
		ANSI 150	40.1	522
	4"	ANSI 300	40.8	540
CC100		ANSI 600	42.6	562
	DN100	PN 10, 16	38.1	509
	DIVIOU	PN 25, 40	39.1	531
		ANSI 150	51.9	547
	6"	ANSI 300	52.7	584
CC150		ANSI 600	54.6	644
	DN150	PN 10, 16	49.2	542
	150 אוט	PN 25, 40	50.8	584

Sensor unit: CC025 through CC080 (Low-temperature models) Transmitter: Separately-mounted/flange connection type

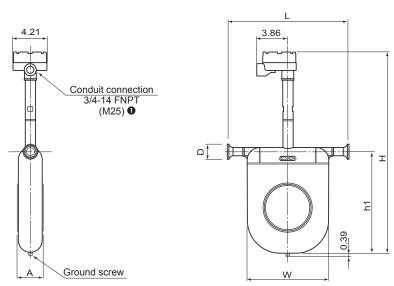


• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI DIN										
Model	Nominal	150	300	600	Nominal	PN10, 16	PN25, 40	Н	h1	Α	W	Approx. Weight (lb)
	size (in.)		L		size (DN)	L						weight (ib)
CC025	1	16.2	9.53	17.2	25	14.8	15	26	13	3.27	10.3	24
CC040	1-1/2	21.5	22	22.6	40	20	20.2	24.4	47.0	4.70	45.0	44.8
CC050	2	21.7	22.2	22.9	50	20.2	20.4	31.1	17.8	4.76	15.2	46.3
CC080	3	27.5	28.2	29	80	25.9	26.6	37.8	23.7	6.85	20.1	119

<sup>•</sup> This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.

Sensor unit: CC025 through CC080 (Low-temperature models) Transmitter: Separately-mounted/ferrule connection type



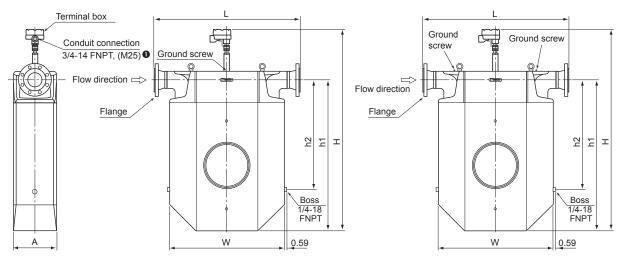
Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

BA		Ferrule			h1	Α	w	-	Approx.
Model	Nominal size	Connection <b>②</b>	L	Н	111	A	VV	D	weight (lb)
CC025	25	Ferrule 25 (ISO), IDF 1S	14.6	26	13	3.27	10.3	1.99	18.3
CC040	40	Ferrule 38 (ISO), IDF 1.5S	40.4	24.4	17.8	4.76	45.0	1.99	27.5
CC050	50	Ferrule 51 (ISO), IDF 2S	19.4	31.1	17.8	4.76	15.2	2.52	37.5
CC080	80	Ferrule 76.1 (ISO), IDF 3S	25.9	37.8	23.7	6.85	20.1	3.58	105.8

<sup>2</sup> Process connection: S = in.

<sup>•</sup> DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC100 through CC250 (Low-temperature models) Transmitter: Separately-mounted/flange connection type



• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

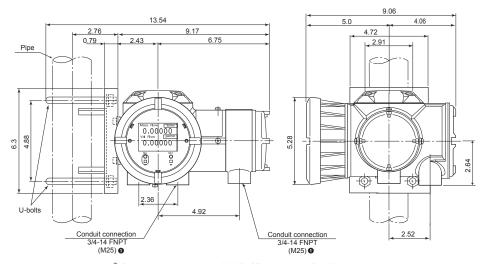
(CC100, CC150)

(CC15H through CC250)

Madal	F	lange			h.4	h-0		14/	Approx.
Model	Nominal size	Flange rating <b>①</b>	L	Н	h1	h2	A	W	Weight (lb)
		ANSI 150	40.1						
	4"	ANSI 300	40.8			26			
CC100		ANSI 600	42.6	54.6	40		11.8	31.9	509
	DN100	PN 10, 16	38.1						
	DIVIOU	PN 25, 40	39.1						
		ANSI 150	51.2						
	6"	ANSI 300	52.7						
CC150		ANSI 600	54.6	54.6	40	26	11.8	31.9	542
	DN150	PN 10, 16	49.2						
	טפואום	PN 25, 40	50.8	1					
		ANSI 150	42.8						
	6"	ANSI 300	43.6						
CC15H	CC15H	ANSI 600	45.6	62.5	46.9	33.5	12.6	31.9	683
	DNI450	PN 10, 16	40.1						
	DN150	PN 25, 40	41.7						
	8"	ANSI 150	55.8	00.5					
		ANSI 300	56.6		46.9				
00000		ANSI 600	58.8			33.5	12.6	31.9	750
CC200		PN 10, 16	52.7	62.5					750
	DN200	PN 25	54.1	1					
		PN 40	54.7	1					
	8"	ANSI 150	55.8						
	8	ANSI 300	56.6						
CC20H		PN 10, 16	52.7	71.4	54.7	37.8	16.5	43.7	1345
	DN200	PN 25	54.1	1					
		PN 40	54.7	1					
	10"	ANSI 150	69.8						
	10"	ANSI 300	71.1						
00050		PN 10	67.1	74.4	F4.7	27.0	10.5	40.7	4400
CC250	DNOSS	PN 16	67.3	71.4	54.7	37.8	16.5	43.7	1433
	DN250	PN 25	68.7						
		PN 40	70						

<sup>•</sup> For specifications of other flange ratings, see the approval drawing (or delivery specification).

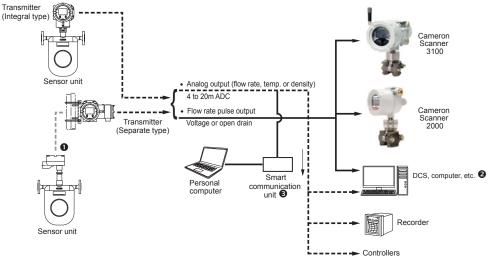
## Separately-mounted transmitter



Pipe mounting hardware (U-bolts) are furnished as standard accessories. The pipe must be provided by the customer.

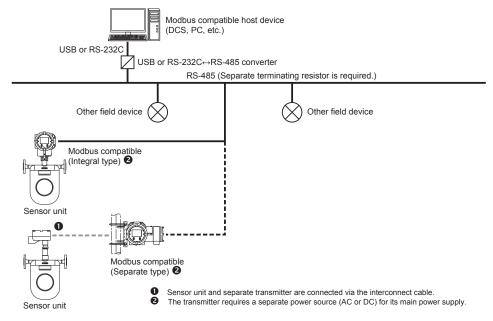
## REMOTE MEASURING SYSTEM

## **HART Protocol**



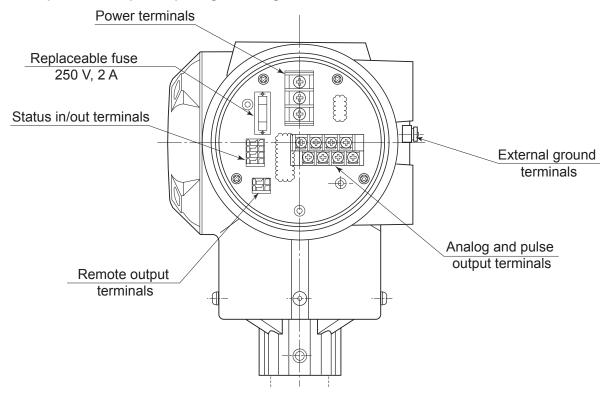
- In case of the separate type, the sensor unit and transmitter are connected with interconnect cable. For detailed information about companion instruments, see respective product catalogs and general specification sheets. Communications via hybrid Bell 202 over HART.

## **Modbus Protocol**



## **WIRING DIAGRAM**

# Transmitter power and input/output signal wiring

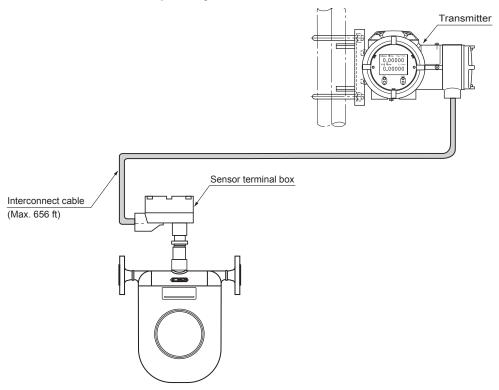


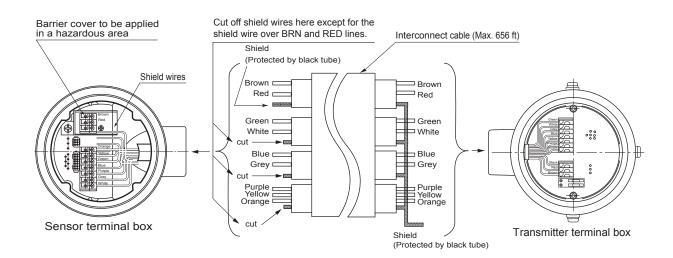
# Transmitter identification and description

Item	Label	Description	Remarks					
	A1 (+)	Analog Output 1 (4 to 20 mA)	Maximum load resistance is 600Ω for Analog Outputs 1 and 2.					
	A1 (–)	, ,						
	A2 (+)	Analog Output 2 (4 to 20 mA)						
	A2 (–)	y manag a apar = ( · · · · · · · · · · · · · · · · · ·						
	P1 (+)	Pulse Output 1	Maximum pulse output (voltage/open drain) transmission					
	P1 (–)	(voltage/open drain)	length: - 32.8 ft @ 10 kHz					
	P2 (+)	Pulse Output 2	328 ft @ 1 kHz     3.28 ft @ 100 Hz					
Signal	P2 (–)	(voltage/open drain)	Minimum conductor size: 18 AWG					
	SI (+)	Status Input (contact)	_					
	SI (–)	Ctatus input (contact)						
	SO (+)	Status Output (open drain)						
	SO (-)	Status Output (open drain)						
	I/O (+)	Expanded Input/Output	For Modbus communications:					
	I/O (–)	(Modbus communication, etc.)	Maximum transmission length: 3900 ft     Minimum conductor size: 18 AWG					
	L (+)	Power (with DC power: +)	_					
Power	GND	Earth Ground						
	N (–)	Power (with DC power: –)						

#### WIRING DIAGRAM

## Wiring between sensor unit and separately-mounted transmitter





Use dedicated interconnect cable and prepare shielded wire as follows.

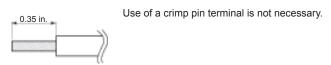
#### Transmitter end

- 1. Bundle shielded wires colored in brown/red, green/white, blue/grey and purple/yellow/orange and cover the wires with a black tube.
- 2. Connect only one wire to the terminal box (black), taking care to avoid potential contact with the housing or conductive parts.

#### Sensor end

- 1. Cover the brown/red shielded wire with a black tube and connect it to the terminal box, taking care to avoid potential contact with the housing or conductive parts.
- 2. Clip all shielded wires except brown/red as shown in the above figure.

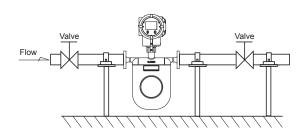
## Recommended cable end treatment



#### INSTALLATION

#### **Typical installation**

- 1. Avoid pipeline stresses on the meter.
- The meter should be supported near each process connection, as shown in the illustration on the right.
- 3. Avoid supporting the meter body directly.
- Pipeline should be arranged such that the meter is constantly filled with the process fluid. Avoid, however, installing it in a low point in the piping where slurries may build up.
- Provide a valve downstream of the meter to allow zeroing by obtaining a true zero flow. We recommend providing another valve upstream of the meter for servicing or maintenance.



#### Precautions at installation

- Locate the meter at least 3.28 feet from large transformers, motors, or other sources of electromagnetic induction. Also avoid installation near sources
  of excessive vibration, such as motors and pumps.
- 2. In case of measurement of a process fluid which requires heat retention, heat trace may be applied directly to the sensor body. Heat trace should be held below 392°F. Explosion-proof models require the temperature to be held below their maximum allowable levels.
- 3. To ensure consistent volume flow and density measurements, heat retention is suggested.
- 4. The sensor unit is of gas-tight construction. To prevent dew condensation inside in a low-temperature application, it is filled with argon gas. To avoid damaging the sensor, do not drop the sensor unit or otherwise subject it to impact shocks.
- 5. In a horizontal run, install the sensor unit with the transmitter up as shown in the typical installation figure.
- 6. A control valve should be located downstream of the meter. In an arrangement where cavitation may possibly take place, locate it at least 16.4 feet away.
- 7. To ensure consistent and accurate measurement, the Coriolis flow meter should be placed in an environment where pipeline oscillation is held below 0.3G.
- 8. Sudden temperature change may damage the performance of the flow meter. Keep the temperature change of the fluid within ±55°F/min. for both heating and cooling.

#### Prevention of cavitation

Cavitation can cause a loss of meter accuracy in measurement. To prevent cavitation, maintain line pressure upstream and downstream of the meter. Avoid opening the line to the atmosphere immediately downstream of the meter. Care must be taken particularly with high vapor pressure liquids. It is recommended that back pressure in the meter (downstream pressure) be kept above the value calculated by the formula below:

 $Pd = 3\Delta P + 1.3Pv$ 

Where Pd: Downstream pressure (psia)

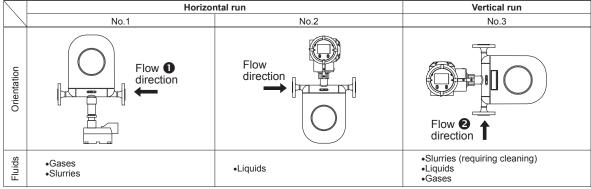
 $\Delta P$ : Pressure loss across the meter (psig)

Pv: Steam pressure of the process fluid at measurement (psia)

## **Physical orientation**

#### CC003 through CC250

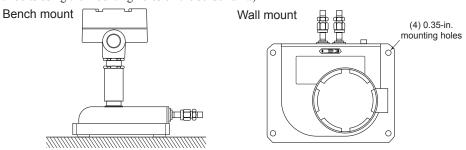
Recommended physical orientation varies with the type of process fluid. (No. 2 in the figure below shows basic orientation for liquid service.) Physical orientation must be specified at the time of order.



- For installation orientation in No. 1, Cameron recommends the separately-mounted transmitter. If the integrally-mounted transmitter is preferred, contact Cameron.
- **2** The measuring tube of the CC003 is in double-loop configuration without self-draining feature.

#### CC00A and CC001

The instrument can be installed either on a bench or a wall. The following physical orientation is suggested. (When wall mounting, secure the instrument with bolts using the mounting holes on the sensor unit.)



## **EXPLOSION-PROOF SPECIFICATIONS**

#### **CSA**

## **Integral type**

- Transmitter ratings: Class I, Zone 1, Ex d ib IIB T4 Gb
   Class I, Zone 1, AEx d ib IIB T4 Gb
- Transmitter and sensor ambient temperature: -40°F to 131°F
- Fluid temperature: –40°F to 176°F

- Sensor ratings: Class I, Zone 1, Ex ib IIB T4 Gb
  - Class I, Zone 1, AEx ib IIB T4 Gb
- Sensor to be connected: CC006 through CC150
- · Communication: HART, Modbus

#### Separate type

- Transmitter ratings: Class I, Zone 1, Ex d [ib] IIB T6 Gb
  Class I, Zone 1, AEx d ib IIB T4 Gb
- Transmitter ambient temperature: –40°F to 131°F
- Sensor ratings: Class I, Zone 1, Ex ib IIC T1, T2, T3, T4, T5 Gb
   Class I, Zone 1, AEx ib IIC T1, T2, T3, T4, T5 Gb
- · Communication: HART, Modbus

#### **Meter combinations**

	Mete	r Temperature Cate	gory	Haz	ardous Locat	tion Temperature	Class	
Model	Model Code Temp Category	Description	Nominal Media Temp (°F)	Model Code Temp Class	Description	Media Temp (°F)	Ambient Temp (°F)	Transmitter Mounting
CC00A and CC001	2	Standard B	Under 392°	3	Class T3	-40° to 302°	-40° to 140°	Separate transmitter
CC003	2	Standard B	Under 392°	2	Class T2	-40° to 392°	-40° to 140°	Separate transmitter
CC025 through CC080	1	Standard A	Under 266°	4	Class T4	-40° to 176°	-40° to 140°	Integral transmitter
	1	Standard A	Under 266°	4	Class T4	-40° to 176°	-40° to 140°	Separate transmitter
	2	Standard B	Under 392°	3	Class T3	-40° to 302°	-40° to 140°	Separate transmitter
	3	High Temp	Under 608°	1	Class T1	-4° to 662°	-4° to 122°	Separate transmitter
	4	Low Temp	-328° to 122°	5	Class T5	-328° to 122°	-4° to 122°	Separate transmitter
CC100 through CC150	2	Standard B	Under 392°	4	Class T4	-40° to 176°	-40° to 140°	Integral transmitter
	2	Standard B	Under 392°	2	Class T2	-40° to 392°	-40° to 140°	Separate transmitter
	3	High Temp	Under 608°	1	Class T1	-4° to 662°	-4° to 122°	Separate transmitter
	4	Low Temp	-328° to 122°	5	Class T5	-328° to 122°	-4° to 122°	Separate transmitter

Meter Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification.

Hazardous Location Temperature Class describes "T" codes or temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification.

If a meter will be used in a process with temperature lower than -22°F, Charpy impact testing is required.

CSA certification is pending for models CC15H, CC200, CC20H, and CC250.

## ATEX/IECEx

#### **Integral type**

- Transmitter rating: IIG2 Ex d ib IIC T4 Gb
- Sensor rating: II2G Ex ib IIC T4
- Transmitter and sensor ambient temperature: -40°F to 131°F
- Explosion-proof applied temperature: 138.2°F
- Fluid temperature: -40°F to 176°F
- Sensor to be connected: CC006 through CC250
- · Communication: HART, Modbus

#### Separate type

- Transmitter rating: II2G Ex d [ib] IIC T6 Gb
- Sensor rating: II2G Ex ib IIC T4

- Transmitter ambient temperature.: –40°F to 131°F
- Communication: HART, Modbus

#### **Meter combinations**

	Mete	r Temperature Cat	egory	Haz	ardous Loca	tion Temperature	Class		
Model	Model Code Temp Category	Description	Nominal Media Temp (°F)	Model Code Temp Class	Description	Media Temp (°F)	Ambient Temp (°F)	Transmitter Mounting	
CC00A and CC001	2	Standard B	Under 392°	3	Class T3	-40° to 302°	-40° to 140°	Separate transmitter	
CC003	2	Standard B	Under 392°	2	Class T2	-40° to 392°	-40° to 140°	Separate transmitter	
CC025 through CC080	1	Standard A	Under 266°	4	Class T4	-40° to 176°	-40° to 140°	Integral transmitter	
	1	Standard A	Under 266°	4	Class T4	-40° to 176°	-40° to 140°	Separate transmitter	
	2	Standard B	Under 392°	3	Class T3	-40° to 302°	-40° to 140°	Separate transmitter	
	3	High Temp	Under 608°	1	Class T1	-4° to 662°	-4° to 122°	Separate transmitter	
	4	Low Temp	-328° to 122°	5	Class T5	-328° to 122°	-4° to 122°	Separate transmitter	
CC100 through CC150	2	Standard B	Under 392°	4	Class T4	-40° to 176°	-40° to 140°	Integral transmitter	
	2	Standard B	Under 392°	2	Class T2	-40° to 392°	-40° to 140°	Separate transmitter	
	3	High Temp	Under 608°	1	Class T1	-4° to 662°	-4° to 122°	Separate transmitter	
	4	Low Temp	-328° to 122°	5	Class T5	-328° to 122°	-4° to 122°	Separate transmitter	
CC15H through CC250	2	Standard B	Under 392°	4	Class T4	-40° to 176°	-40° to 140°	Integral transmitter	
· • • • • • • • • • • • • • • • • • • •	2	Standard B	Under 392°	2	Class T2	-40° to 392°	-40° to 140°	Separate transmitter	
	4	Low Temp	-328° to 122°	5	Class T5	-328° to 122°	-4° to 122°	Separate transmitter	

Meter Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification.

Hazardous Location Temperature Class describes "T" codes or temperature limitations that apply if the meter is installed in a hazardous area, per the ATEX/IECEx certification. If a meter will be used in a process with temperature lower than -22°F), Charpy impact testing is required.

# Appendix A: Metric Units

## **GENERAL PERFORMANCE**

#### **Flow Rate**

		Size	Guaranteed	Minimum	Maximum	Maximum	Accura	су <b>6</b>	Repeata	ability 6	Zero	Analog
Meter type	Model	(in.)	minimum rate (kg/h)	setting rate (kg/h)	service rate (kg/h)	allowable rate (kg/h)	Liquids	Gases	Liquids	Gases	stability (kg/h)	output accuracy
Low-flow	CC00A		0.024	0.12	2.4	3.6	[±0.2%		[±0.05%		0.00036	
	CC001	1/4	0.09	0.45	9	13.5	±ZS ] of reading <b>5</b>		±1/2 ZS] of reading		0.00135	
	CC003	3/8	0.72 (0.9)	3.6	72	144 (180)					0.0018	
	CC006	3/8	3.6	18	360	720		[±0.5% ±ZS]		[±0.25%	0.018	
	CC010	1/2	12	60	1200	2400		of reading	_	±1/2 ZS]	0.06	
	CC015	1/2	36	180	3600	7200	±0.1% of reading <b>2</b>	or roading	±0.05% <b>3</b>	of reading	0.18	
Standard	CC025	1	108	540	10800	21600	of reading •		of reading		0.54	
and Low-	CC040	1-1/2	390	1950	39000	78000					1.95	
temperature	CC050	2	330	1550	33000	70000					1.55	
	CC080	3	1200	6000	120000	240000					6	
	CC100 CC150	4 6	3420	17100	342000	684000					17.1	Accuracy ±0.1%
	CC15H	6					[±0.1%		[±0.05%			of full scale
	CC200	8	7000	35000	700000	1400000	±ZS] of reading 4	_	±1/2 ZS] of reading	_	35	Scale
	CC20H	8	44000	70000	4.400000	000000	or reading •		Orreading		70	
	CC250	10	14000	70000	1400000	2800000					70	
High-	CC010	3/8	24	120	840	1680	[±0.2% ±ZS]	[±0.5% ±ZS]	±0.1% ±1/2 ZS	[±0.25% ±1/2 ZS]	0.21	
pressure	CC015	3/4	78	390	2550	5100	of reading <b>5</b>	of reading	of reading	of reading	0.636	
High-	CC025	1	108	540	10800	21600					1.08	
temperature	CC040	1-1/2	390	1950	39000	79000					3.9	
	CC050	2	390	1950	39000	78000	±0.1% ±ZS		[±0.05%		3.9	
	CC080	3	1200	6000	120000	240000	of reading	_	±1/2 ZS] of reading	_	12	
	CC100	4	3420	17100	342000	684000					34.2	
	CC150	6	5-20	17100	342000	004000					04.2	

- When a maximum allowable range 180 kg/h is adopted, the minimum flow rate is 0.9 kg/h.
- 2 ±ZS is applied for flow rates below 5% ( 2.5% for Model CC003) of the maximum service rate (within the guaranteed flow range).
- 1/2 ZS is applied for flow rates below 5% (2.5% for Model CC003) of the maximum service rate (within the guaranteed flow range).
- If an accuracy of ±0.1% of reading is required, consult Cameron.
- 6 Above maximum service flow rate, the accuracy is [±0.3% ±ZS] of reading
  - If you request volume flow measurement for the purpose of fiscal transactions or weights and measurements transactions, contact Cameron.
  - In gas measurement, the maximum permissible flow velocity varies with the type of gas and some may be beyond the bounds of measurement. If so, contact Cameron.
  - ZS = Zero stability error (During testing, zero stability and current flow rate should be read in the same measurement unit.)

#### **Volumetric Flow Rate**

Model	Units	Guaranteed minimum rate	Minimum setting rate	Maximum service rate	Maximum allowable
CC00A	l/hr	0.024	0.12	2.4	3.6
CC001	l/hr	0.09	0.45	9.01	13.5
CC003	l/hr	0.721	3.6	72.1	144
CC006	l/min	0.06	0.3	6.01	12
CC010	l/min	0.2	1	20	40
CC015	l/min	0.601	3	60	120
CC025	l/min	1.8	9.01	180	360
CC040	l/min	0.54	20.5	054	1201
CC050	m³/hr	6.51	32.5	651	1301
CC080	m³/hr	1.2	6.01	120	240
CC100	m³/hr	3.42	17.1	342	685
CC150	m³/hr	3.42	17.1	342	600
CC15H	m³/hr	7.01	35	701	1401
CC200	m³/hr	7.01	33	701	1401
CC20H	m³/hr	14	70	1401	2802
CC250	m³/hr	14	70	1401	2002
CC010*	l/min	0.4	2	14	28
CC015*	l/min	1.3	6.51	42.5	85.1

<sup>\*</sup> High-pressure models

Calculations based on water (specific gravity of 1) at 15°C (mass = 999.13 kg/m³). Actual flow ranges vary with media density. To determine the flow range for your fluid, divide the values above by the fluid's specific gravity.

# Density (Liquids)

Meter type	Model	Size	Metering	Accuracy	Analog output		
weter type	Woder	(in.)	range	(Option)	accuracy		
Low-flow	CC00A	1/4		±0.003 g/mL			
	CC001	1/4		±0.003 g/IIIL			
	CC003	3/8					
	CC006	3/8					
	CC010	1/2					
	CC015	1/2					
Standard	CC025	1			A		
and Low-	CC040	1-1/2	0.3 to 2g/mL		Accuracy ±0.1%		
temperature	CC050	2	0.5 to 29/11L	±0.0005 g/mL	of full scale		
	CC080	3		±0.0005 g/IIIL	of full scale		
	CC100	4					
	CC150	6					
	CC15H	6					
	CC200	8					
	CC20H	8					
	CC250	10					
High-	CC010	3/8	0.3 to 2 g/mL	±0.004 g/mL			
pressure	CC015	3/4	0.5 to 2 g/IIIL	±0.004 g/IIIL			
High-	CC025	1			Acquirect		
temperature	CC040	1-1/2			Accuracy ±0.1%		
	CC050	2	0.3 to 2g/mL	±0.003g/mL	of full scale		
	CC080	3	0.3 to 29/11L	±0.003g/IIL	or ruin source		
	CC100	4					
	CC150	6					

## **Sensor Unit Specifications**

#### Low-Flow Models (CC00A, CC001 and CC003)

	Item		Descr	ription				
Model		CC00A	CC001	CC003				
Nominal size		1/4	п	10mm, 3/8" <b>①</b> , DN15				
Materials	Wetted parts	SUS3	16L	SUS316L, Hastelloy C22/SUS316L, Hastelloy C22 2				
	Housing		SUS	5304				
	O-rings	Fluoro-elastomer (standare	d Viton®), PTFE (option)	_				
Process connection		R 1/	/4	ANSI 100, 300, 600 RF; DIN PN 10, 16, 25, 40 RF <b>3</b> ; IDF Ferrule <b>4</b> , Threaded				
Applicable fluid			Liquid a	and gas				
Density range			0 to 2.0g/mL					
Temperature range			−200°C to 200°C <b>6</b>					
Tube withstand @ 20°	С	_		Wetted parts materials: SUS316L maximum 10 MPa;				
Maximum operating	Liquid	15M Pa a	at 20°C	Hastelloy C22 maximum 15 MPa				
pressure	Gas	0.98 N	ЛРа	(depending on flange rating)				
Sensor housing withs	tand <b>5</b>	_		7.2 MPa				
Flow direction Explosion-proof configuration			Bidire	ctional				
		CSA, ATEX	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page A-22 for details.)					
Dust-tight, waterproof	configuration		IP66/67					

- 1/2" for ANSI flanged sensors.
- When wetted parts are made from Hastelloy C22, only the threaded connection is available.
- OIN flanges are only available for meter material SUS316L.
- For application with foods, this product does not comply with CE marking.
  - This pressure does not represent the rated test pressure of a pressure vessel, but 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not consititute a failure of the test.
- Refer to Explosion-proof Specifications, page A-22 for details. In case of non-explosion-proof type, the maximum measurement temperature is 130°C. However, the product must be used within the maximum ambient temperature of 45°C. Higher temperature limits can be achieved with the high-temperature models.
  - · Only available with separately-mounted transmitter and interconnect cable (ordered separately; 10-meter minimum, available in 5-meter increments thereafter).
  - For products conforming to the high pressure gas safety regulations and CE marking, consult Cameron.

#### Standard Models (CC006 through CC080)

	Item				Description							
Model		CC006	CC010	CC015	CC025	CC040	CC050	CC080				
Nominal size		10 mm, 3/8" <b>1</b> , DN15	10 Hilli, 5/6 9,		50 mm, 2", DN50	80 mm, 3", DN80						
Matariala	Wetted parts		SUS316L, Hastelloy C22, Hastelloy C22/SUS316L									
Materials	Housing		SUS304									
Process connection			ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF <b>2</b> ; IDF Ferrule <b>3</b> ; Threaded									
Applicable fluids			Liquid and gas									
Density range			0 to 2.0 g/mL									
Temperature range			-200°C to 200°C <b>⑤</b>									
Tube withstand @ 20	)°C		9.4 MPa									
Maximum operating	pressure			Dep	ends on flange ra	ating						
Sensor housing with	stand <b>4</b>	3.8 MPa	3.0 MPa	2.2 MPa	1.6 MPa	1.81	MPa 1.4 MP					
Flow direction			Bidirectional									
Explosion-proof con	figuration		CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page A-22 for details.)									
Dust-tight, waterprod	of configuration		IP66/67									

- 1/2" for ANSI flanged sensors.
- 2 DIN flanges are only available for meter materials SUS316L and SUS316L/C22.
- **3** For application with foods, this product does not comply with CE marking.
- This pressure does not represent the rated test pressure of a pressure vessel, but 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.
- Refer to Explosion-proof Specifications, page A-22 for details. In case of non-explosion-proof type, the maximum measurement temperature is 130°C. However, the product must be used within the maximum ambient temperature of 45°C. Higher temperature limits can be achieved with the high-temperature models.
  - For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

## High-Flow Models (CC100 through CC250)

	Item			Descr	iption					
Model	,	CC100	CC150	CC15H	CC200	CC20H	CC250			
Nominal size		100 mm, 4", DN100 150 mm, 6", DN150 200 mm, 8", DN200 250 mm, 10", I								
Materials	Wetted parts	SUS316L								
Waterials	Housing			SUS	304					
Process connec	Process connection ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF									
Applicable fluids	pplicable fluids Liquid									
Density range		0.3 to 2.0 g/mL								
Viscosity range		Maximum 10000 mPa·s								
Temperature ran	ige			–200°C to	200°C <b>①</b>					
Tube withstand	@ 20°C	13.56	MPa	10.6	MPa	8.8	В МРа			
Maximum opera	ting pressure			Dependent or	n flange rating					
Flow direction Bidirectional										
Explosion-proof	configuration		CSA, ATEX, IECE	Ex (Refer to Explosion-p	roof Specifications, pag	ge A-22 for details.)				
Dust-tight, waterproof configuration IP66/67										



Refer to Explosion-proof Specifications, page A-22 for details. In case of non-explosion-proof type, the maximum measurement temperature is 130°C. However, the product must be used within the maximum ambient temperature of 45°C. Higher temperature limits can be achieved with the high-temperature models.

#### High-Pressure Models (CC010 and CC015)

	9							
	Item	Descript	ion					
Model		CC010	CC015					
Makada	Wetted parts	Flow tube: Hastelloy C22; Manifold: Hastelloy C22 equivalent (CX2MW)						
Materials	Housing	SUS304						
Process connecti	ion	3/8" threaded 3/4" threaded						
Applicable fluid		Liquid and gas						
Density range		0.3 to 2.0 g/mL						
Temperature rang	ge	Integrally-mounted: –20°C to 90°C; Separately-mounted: –200°C to 200°C						
Maximum operati	ing pressure (at room temperature)	36 MPa	43 MPa					
Sensor housing v	withstand <b>①</b>	3.0 MPa	2.2 MPa					
Flow direction	onal							
Explosion-proof	configuration	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page A-22 for details.)						
Dust-tight, waterp	proof configuration	IP66/67						



This pressure does not represent the rated test pressure of a pressure vessel, but 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not consititute a failure of the test.

<sup>•</sup> For products conforming to the high-pressure gas safety regulations, consult Cameron.

<sup>•</sup> For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

#### High-Temperature Models (CC025 to CC150)

	Item			Des	cription								
Model		CC025	CC040	CC050	CC080	CC100	CC150						
Nominal size		25 mm, 1", DN25	40mm, 1-1/2", DN40	50 mm, 2", DN50	80 mm, 3", DN80								
Materials Wetted parts			SUS316L		SUS316L, Hastelloy C22/SUS316L, Hastelloy C22	SUS316L							
	Housing		SUS304										
Process connect	ion		1" to 3": ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF 4" and 6" : ANSI 150, 300, 600 RF; DIN PN10, 16, 25, 40RF										
Applicable fluids	i		Liquid										
Density range		0.3 to 2.0 g/mL											
Temperature range	ge <b>①</b>		−40°C to 350°C										
Tube withstand @			9.	4 MPa		13.5	MPa						
Maximum operat	ing pressure			Dependent	on flange rating								
Sensor housing	withstand 2	1.6 MPa	1.81	МРа	1.4 MPa	-	_						
Flow direction				Bidir	ectional								
Explosion-proof	configuration		CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page A-22 for details.)										
Dust-tight, water	proof configuration			IP	66/67								

## Optional Heat Tracer Specifications (Available for Models CC025 through CC080)

Applicable fluids	Hot water, saturated steam, overheated steam			
Heat retention fluid maximum output pressure	0.98 MPa			
Joint port for heat retention fluid	10 mm stainless tubing			
Recommended joint	Standard stainless steel ferrule-type compression fitting for 10mm tubing			

• Allowable ambient temperature permitted for the sensor unit is up to 50°C.

This pressure does not represent the rated test pressure of a pressure vessel, but 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.

Heat trace should only be used for heating the meter. Do not use for cooling of flowing media.

- For products conforming to the high-pressure gas safety regulations, consult Cameron.
- · Only available with separately-mounted transmitter and interconnect cable (ordered separately; 10-meter minimum, available in 5-meter increments thereafter).

#### Low-Temperature Models (CC025 through CC250)

Ite	em					Descripti	on							
Model		CC025	CC040	CC050	CC080	CC100	CC150	CC15H	CC200	CC20H	CC250			
Nominal size		25 mm, 1", DN25	40 mm, 1-1/2", DN40	50 mm, 2", DN50	80 mm, 3", DN80	100 mm, 4", DN100	150 mm, 20			mm, N200	250 mm, 10", DN250			
Materials	Wetted parts		SUS316L, Hastelloy C22 SUS316L											
Waterials	Housing	SUS304												
Process connection	on <b>①</b>	ANSI 150, 3	00, 600 RF; D IDF Fe	PIN PN 10, 16, errule <b>3</b>	25, 40 RF <b>2</b> ;	2; ANSI 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF					9			
Applicable fluids			Liquio	l and gas				Lic	quid					
Density range						0.3 to 2.0 g	g/mL							
Temperature rang	е				–200°C to \$	50°C (separat	ely-mounted	l only)						
Tube withstand			9.4 MF	Pa at 20°C		13.56 MP	a at 20°C	10.6 MP	a at 40°C	8.8 MPa	a at 40°C			
Maximum operatir	ng pressure				Dep	endent on fla	inge rating							
Sensor housing w	rithstand <b>4</b>	1.6 MPa	1.8	MPa	1.4 MPa			-	_					
Flow direction	Flow direction Bidirectional													
Explosion-proof c	onfiguration			CSA, ATEX, II	ECEx (Refer to Ex	plosion-proof	Specification	ns, page A-2	2 for details.)					
Dust-tight, waterp	roof configuration					IP66/67	7							

When the SUS316L is selected as wetted parts material, the flange material will be SUS316.

2 DIN flanges are only available for meter material SUS316L.

For application with foods, this product does not comply with CE marking.

This pressure does not represent the rated test pressure of a pressure vessel, but 1/4 of the factory-tested breakdown pressure or the data obtained from FEA analysis, whichever is lower. Distorted enclosures do not constitute a failure of the test.

- Only available with separately-mounted transmitter and interconnect cable (ordered separately, 10-meter minimum, available in 5-meter increments thereafter).
- For products conforming to the high-pressure gas safety regulations and CE marking, consult Camoeron.

# **Transmitter Specifications**

Item	Description						
Model		PAOK					
Power supply		85 to 264 VAC, 50/60 Hz or 20 to 30 VDC					
Power consumption		(Safety rated 100 to 240 VAC, 50/60 Hz)  Maximum 15W					
Ambient temperature		-40°C to 55°C <b>①</b>					
Transmission length (separately-mounted)		Maximum 200 m (dedicated cable used) 2					
Applicable EU directive		EMC Directive: 2004/108/EC; ATEX Directive: 94/9/EC					
Applicable EN standards	EMC—EN55011: 1998/A1, 1999/A2, 2002 Group 1, Class B; EN61000-6-2: 2001; EN061326-1: 2006 ATEX—EN60079-0: 2012; EN60079-1: 2007; EN60079-11: 2012 IECEX—IEC60079-0: 2011; IEC60079-1: 2007-04; IEC60079-11: 2011						
Explosion-proof configuration	CSA, ATEX, IECEx (Refer to Explosion-proof Specifications, page A-22 for details.)						
Dust-tight, waterproof configuration		IP66/67					
Transmitter configuration		Integral or separately-mounted					
Finish		Paint type: Baked enamel; Paint color: Light gray (RAL7035)					
Display	LCD display provide	d (128×64 dots), backlit (white, orange); Two infrared light sensors; Two LEDs (green and red)					
Weight (approximate)		Integrally-mounted model, 3.6 kg; Separately-mounted model, 5.0 kg					
	HART (Standard)	Protocol Version 7, Bell 202					
Communication interface 5	Modbus (Optional)	RS-485 Modbus protocol; Baud rate: 9600 bps, 19200 bps, 38400 bps; RTU or ASCII; Response time: 25 to 50 ms					
Damping (default)		Flow rate, 0.8 sec.; Density, 4.0 sec.; Temperature, 2.5 sec.					
Low-flow cutoff (default)		Less than 0.6% of maximum service flow rate					
Pulse output		oen drain (equivalent to open collector)—10V to 30V, 50 mADC, ON resistance ≤0.6 Ω or -1.5V maximum (low level) to 13V minimum (high level), Output impedance: 2.2 kΩ; Setting range—0.1 to 10000 Hz (Maximum: 11000 Hz)					
Analog output	4 to 20 mADC (maximum load: $600~\Omega$ ); Select two outputs from instant flowrate (mass or volume) temperature, and density.						
Status output	Open dra	ain (equivalent to open collector)—30V maximum, 50 mADC, ON resistance ≤0.6 Ω; Select one from error (default) ④, flow direction, or high/low alarm					
Status input	Conta	act-closure (Form "a" contact)—Short: 200 Ω maximum, Open: 100 kΩ minimum; Select one output from remote zero, total reset, 0% signal lock, or function off (default)					

Below –20°C, the display loses its visibility due to weakened contrast. Both the display and infrared sensor may exhibit slow responses below –4°F. If the signal transmission length for a separately-mounted transmitter exceeds 200 m, consult Cameron.

Of the two analog output systems, only analog output 1 is available for HART communication.

The status output can also be configured to activate when meter zeroing is in process.

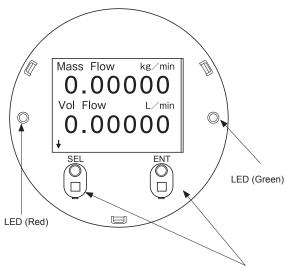
Electrical noise filtering components are installed in connections between power source, output, communications, and chassis.

## **EXTERNAL APPEARANCE**

# **CT Series Models**

	Low-flow and S	tandard Models	High-pressure Model	High-temperature Model	Low-temperature/ Explosion-proof Model	
CC00A, CC001	CC003	CC006 to CC080	CC100 to CC250	CC010, CC015	CC025 to CC150	CC025 to CC250
1/4"	3/8"	3/8" to 3"	4" to 10"	3/8" and 3/4"	1" to 6"	1" to 10"
			9:10			

# Display



- LCD backlight available in white and orange. Color changes according to the status of flow meter.
- In most cases, the backlight shuts off automatically if the optical sensor does not respond within a userdefined duration.

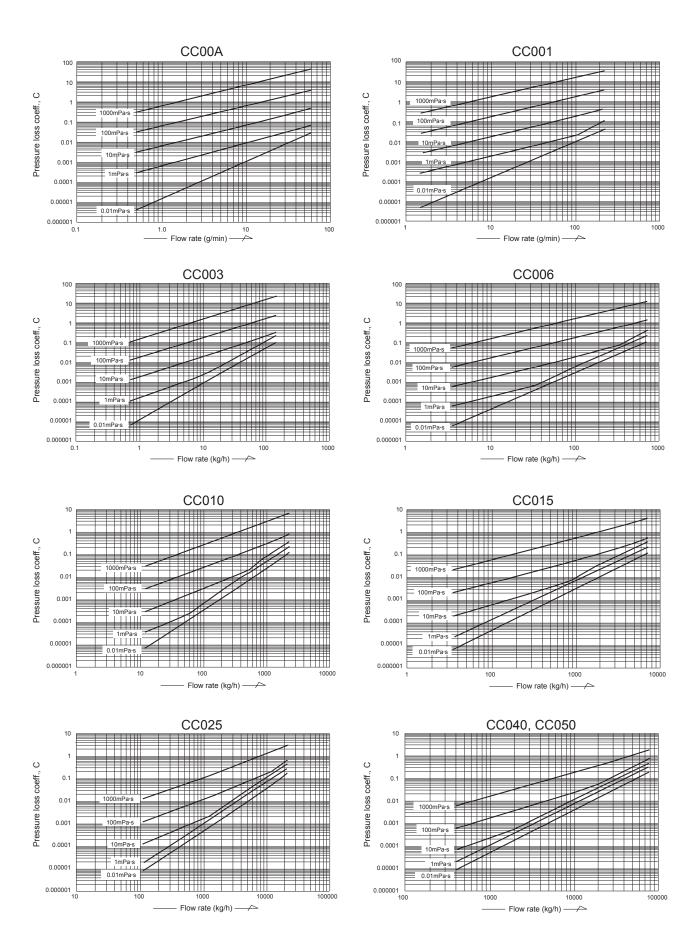
#### Display modes

- -1. Mass instant flowrate
- -2. Volume instant flowrate
- -3. Density
- -4. Temperature
- -5. Pulse count 1 (mass or volume)
- -6. Pulse count 2 (mass or volume)
- -7. Total 1 (mass or volume)
- -8. Total 2 (mass or volume)
- -9. Analog 1 (% instant)
- 10. Analog 2 (% instant)
- 11. Status information
- 12. Mode select (parameter setup)

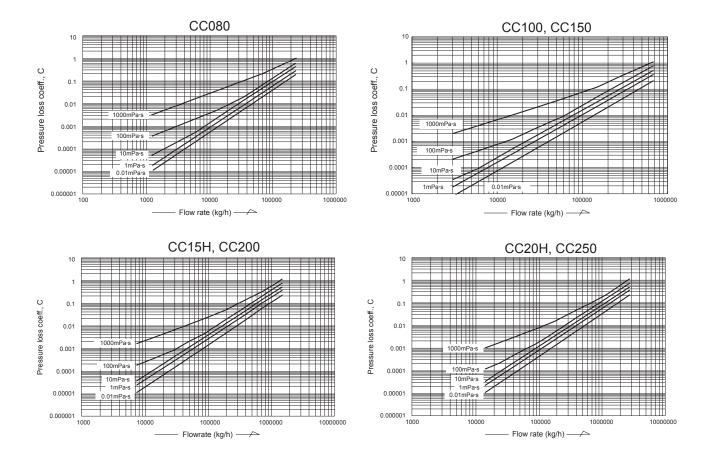
Modbus communication interface displays different contents. For further information, refer to the appropriate communication interface instruction manual.

To select the mode, touch the infrared optical sensor panel through the front glass.

## **PRESSURE LOSSES**



## **PRESSURE LOSSES**



## **How to Determine Pressure Loss**

1. Find the pressure loss factor "C" for a given parameter from its flow rate (kg/h or g/min) and viscosity (mPa·s), then divide "C" by specific gravity "d" ("1" for water) as shown in the following formula:

$$\Delta P = \frac{C}{d} (MPa)$$

\*For high viscosity liquids not shown in these graphs, calculate the pressure loss using the following formula:

$$\Delta P2 = C \times \frac{\mu 2}{\mu 1} \times \frac{1}{d}$$

where  $\Delta P2$  = Pressure loss of high-viscosity liquid (MPa)

μ1 = Maximum viscosity shown in the graph (mPa·s)

μ2 = Viscosity of high-viscosity liquid (mPa·s)

d = Specific gravity of high-viscosity liquid ("1" for water)

C = Pressure loss factor

Sensor unit: CC00A and CC001

Transmitter: Separately-mounted/threaded connection type

(Approximate weight: 9 kg)

Terminal box

Flow direction

1.18 process connection

0.631 process connection

(A) 9 fitting hole

(B) 9.06

9.33

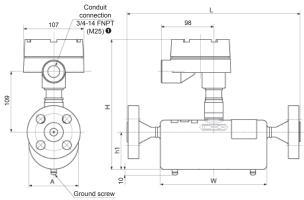
(A) 9 fitting hole

9.06

9.33

Sensor unit: CC003

Transmitter: Separately-mounted/flange connection type



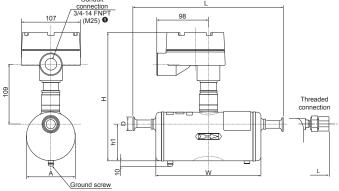
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

	ANSI			DIN							Approx.	
Model	Nominal size (in.)	150	300	600	Nominal	PN10, 16	PN25, 40	н	h1	Α	w	Weight
			L		size (DN)	L						(kg)
CC003	1/2"	301	310	322	15	275	281	230	67	89.1	192	5.0

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC003

# Transmitter: Separately mounted/ferrule or threaded connection type



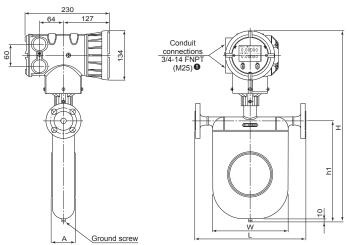
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

Model	Ferrul	e <b>2</b>		ш	h1		w	_	Approx.
wodei	Nominal size	Connection	L	н	111	A	VV	D	Weight (kg)
CC003	10	Ferrule 10A	265	230	67	89.1	192	34	4.5

Model	Threaded Connection	L	Approx. Weight (kg)	
CC003	3/8-18 FNPT	332	4.5	

Sensor unit: CC006 through CC080

Transmitter integrally-mounted/flange connection type



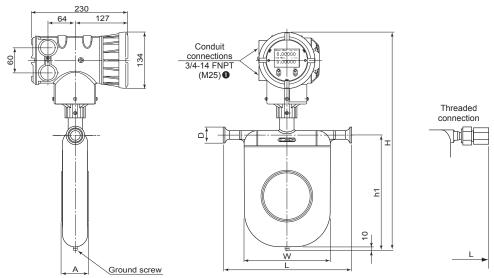
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI				DIN						Approx.
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	н	h1	Α	w	Weight
	(in.)		L		(DN)	L						(kg)
CC006	1/2	268	277	289	15	241	247	424	180	53	148	7
CC010	1/2	282	291	303	15	256	261	462	218	53	163	7.8
CC015	1/2	325	334	347	15	299	305	512	268	65	205	8.8
CC025	1	411	424	437	25	376	380	580	329	83	262	13.3
CC040	1-1/2	547	560	575	40	507	513	740	450	404	205	00
CC050	2	550	563	582	50	513	519	710	452	121	385	23
CC080	3	699	717	737	80	659	675	880	602	174	510	57

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC006 through CC080

## Transmitter: Integrally-mounted/ferrule or threaded connection type



• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

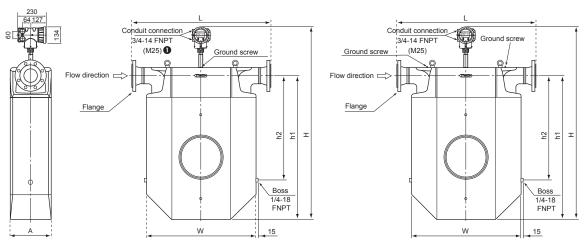
		Ferrule						_	Approx.
Model Nominal size		Connection 2	L	Н	h1	Α	W	D	Weight (kg)
CC006	10	Ferrule 10A	231.5	434	180	53	148	34	5.7
CC010	15	Ferrule 15A	256	462	218	53	163	34	6.3
CC015	15	Ferrule 15A	289	512	268	65	205	34	7.1
CC025	25	Ferrule 25 (ISO), IDF 1S	370	580	329	83	262	50.5	10.7
CC040	40	Ferrule 38 (ISO), IDF 1.5S	400	740	450	404	005	50.5	40
CC050	50	Ferrule 51 (ISO), IDF 2S	493	710	452	121	385	64	19
CC080	80	Ferrule 76.1 (ISO), IDF 3S	658.5	880	602	174	510	91	51

Connection	L	Approx. Weight (kg)
3/8-18 FNPT	296	5.7
3/8-18 FNPT	312	6.3
3/4-14 FNPT	382	7.1
3	/8-18 FNPT /8-18 FNPT	/8-18 FNPT 296 /8-18 FNPT 312

<sup>2</sup> Process connection: A = mm, S (sanitary) = in.

Sensor unit: CC100 through CC250

Transmitter: Integrally-mounted/flange connection type



 $\ensuremath{\mathbf{0}}$  Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

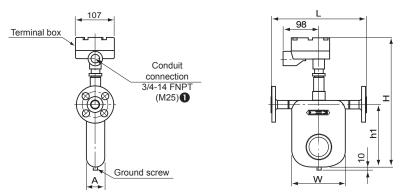
(CC100, CC150)

(CC15H through CC250)

		(00100)	, 00100)			(0010	ii unougii v	00200)	
Model		ange	L	н	h1	h2	Α	w	Approx.
	Nominal size	Flange rating							Weight (kg)
CC100		ANSI 150	1018						
	4"	ANSI 300	1036						
CC100		ANSI 600	1082	1403	1015	660	300	810	231
	DN100	PN 10, 16	968						
	DIVIOO	PN 25, 40	994						
		ANSI 150	1318	1403	1015				
	6"	ANSI 300	1338						
CC150		ANSI 600	1388			660	300	810	246
	DN150	PN 10, 16	1250						
	DIVIDU	PN 25, 40	1290						
		ANSI 150	1087						
	6"	ANSI 300	1107						
CC15H		ANSI 600	1157	1604	1190	851	320	810	310
	DNI450	PN 10, 16	1019						
	DN150	PN 25, 40	1059						
	8"	ANSI 150	1418	1604					
		ANSI 300	1438		1190		320		
		ANSI 600	1494			851		810	
CC200		PN 10, 16	1338						340
	DN200	PN 25	1374						
		PN 40	1390						
		ANSI 150	1418						
	8"	ANSI 300	1438						
CC20H		PN 10, 16	1338	1830	1390	960	420	1110	610
	DN200	PN 25	1374						
		PN 40	1390						
		ANSI 150	1773						
	10"	ANSI 300	1805	1					
		PN 10	1705	1					
CC250		PN 16	1709	1830	1390	960	420	1110	650
	DN250	PN 25	1745	1					
		PN 40	1779	1					
		1 14 40	1110			l			

Sensor unit: CC006 through CC080

Transmitter: Separately-mounted/flange connection type



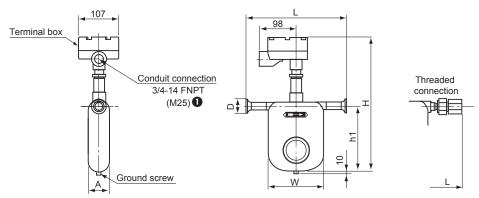
1 Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

		ANSI				DIN						Approx.
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	н	h1	Α	w	Weight
	(in.)		L		(DN)	ı	_					(kg)
CC006	1/2	268	277	289	15	241	247	368	180	53	148	4.0
CC010	1/2	282	291	303	15	256	261	406	218	53	163	4.7
CC015	1/2	325	334	347	15	299	305	456	268	65	205	5.6
CC025	1	411	424	437	25	376	380	524	329	83	262	10.4
CC040	1-1/2	547	560	575	40	507	513	054	450	404	205	20
CC050	2	550	563	582	50	513	519	654	452	121	385	20
CC080	3	699	717	737	80	659	675	824	602	174	510	54

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

## Sensor unit: CC006 through CC080

## Transmitter separately-mounted/ferrule or threaded connection type



Oconduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

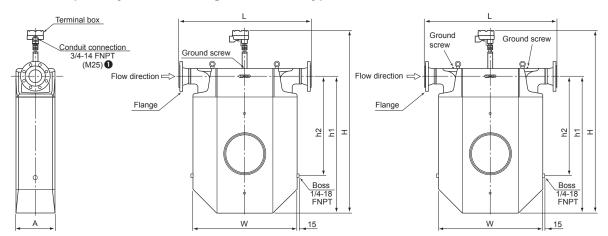
Model		Ferrule		н	h1	А	w	D	Approx.
Wodei	Nominal size	Connection 2	L		111	A	**		Weight (kg)
CC006	10	Ferrule 10A	231.5	368	180	53	148	34	2.8
CC010	15	Ferrule 15A	256	406	218	53	163	34	3.4
CC015	15	Ferrule 15A	289	456	268	65	205	34	4.2
CC025	25	Ferrule 25 (ISO), IDF 1S	370	524	329	83	262	50.5	7.8
CC040	40	Ferrule 38 (ISO), IDF 1.5S	400	054	450	404	205	50.5	40
CC050	50	Ferrule 51 (ISO), IDF 2S	493	654	452	121	385	64	16
CC080	80	Ferrule 76.1 (ISO), IDF 3S	658.5	824	602	174	510	91	48

<sup>2</sup> Process connection: A = mm, S (sanitary) = in.

Model	Threaded Connection	L	Approx. Weight (kg)
CC006	3/8-18 FNPT	296	2.8
CC010	3/8-18 FNPT	312	3.4
CC015	3/4-14 FNPT	382	4.2

Sensor unit: CC100 through CC250

Transmitter: Separately-mounted/flange connection type



● Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

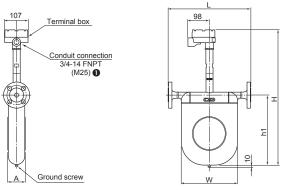
(CC100, CC150)

(CC15H through CC250)

Madal	FI	ange			6.4	<b>LO</b>		10/	Approx.
Model	Nominal size	Flange rating	L	Н	h1	h2	Α	W	weight kg
		ANSI 150	1018						
	4"	ANSI 300	1036	1					
CC100		ANSI 600	1082	1353	1015	660	300	810	231
	DNI400	PN 10, 16	968	1					
	DN100	PN 25, 40	994	1					
		ANSI 150	1318						
	6"	ANSI 300	1338						
CC150		ANSI 600	1388	1353	1015	660	300	810	246
	DNAFO	PN 10, 16	1250	1					
	DN150	PN 25, 40	1290			•			
		ANSI 150	1087						
CC15H	6"	ANSI 300	1107	1					
		ANSI 600	1157	1554	1190	851	320	810	310
	D11450	PN 10, 16	1019			•			
	DN150	PN 25, 40	1059	1					
	8"	ANSI 150	1418	- - 1554					
		ANSI 300	1438						
00000		ANSI 600	1494		1190	851	320	810	0.40
CC200		PN 10, 16	1338						340
	DN200	PN 25	1374						
		PN 40	1390	1					
	8"	ANSI 150	1418						
	8"	ANSI 300	1438	1					
CC20H		PN 10, 16	1338	1780	1390	960	420	1110	610
	DN200	PN 25	1374	1					
		PN 40	1390	1					
	40"	ANSI 150	1773						
	10"	ANSI 300	1805	1					
00050		PN 10	1705	1700	1200	000	400	4440	050
CC250	DNISEO	PN 16	1709	1780	1390	960	420	1110	650
	DN250	PN 25	1745	1					
		PN 40	1779	1					

Sensor unit: CC025 through CC080 (High-temperature models)

Transmitter: Separately-mounted/flange connection type

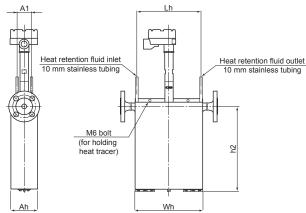


• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

	ANSI DIN							Annrov				
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	Н	h1	Α	W	Approx. weight kg
	(in.)		L		DN	L						worght kg
CC025	1	411	424	437	25	376	380	638	329	83	262	10.9
CC040	1-1/2	547	560	575	40	507	513	700	450	404	205	20.3
CC050	2	550	563	582	50	513	519	768	452	121	385	20.7
CC080	3	699	717	737	80	659	675	960	602	174	510	54.1

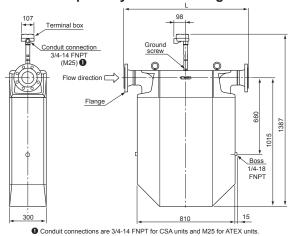
<sup>•</sup> DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC025 through CC080 (with heat tracer) Transmitter: Separately-mounted/flange connection type



Model	Nominal size (in.)	Heat Tracer Model Compatibility	Lh	h2	Ah	A1	Wh	Approx. weight (kg)
CC025	1	HT1-025A	254	340	106	56	268	16.9
CC040	1-1/2	LIT4 040A	270	404	444	70	200	31.8
CC050	2	HT1-040A	376	464	144	70	390	32.2
CC080	3	HT1-080A	501	612	198	110	545	75.1

Sensor unit: CC100 and CC150 (High-temperature models) Transmitter: Separately-mounted/flange connection type

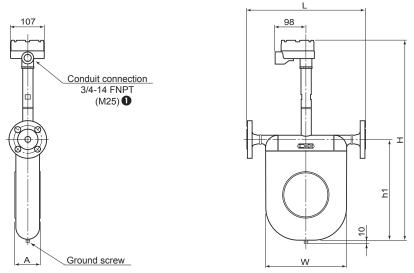


		Flange	]	Approx.
Model	Nominal size	Flange rating 1	L	Weight (kg)
		ANSI 150	1018	237
CC100	4"	ANSI 300	1036	245
		ANSI 600	1082	255
	DNI400	PN 10, 16	968	231
	DN100	PN 25, 40	994	241
		ANSI 150	1318	248
	6"	ANSI 300	1338	265
CC150		ANSI 600	1388	292
	DNI450	PN 10, 16	1250	246
	DN150	PN 25, 40	1290	265

For specifications of other flange ratings, see the approval drawing (or delivery specification).

# **DIMENSIONS [UNITS IN MILLIMETERS]**

Sensor unit: CC025 through CC080 (Low-temperature models) Transmitter: Separately-mounted/flange connection type

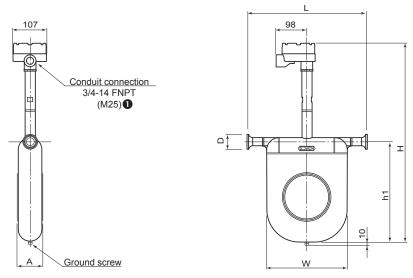


• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

								Approx.				
Model	Nominal size	150	300	600	Nominal size	PN10, 16	PN25, 40	н	h1	Α	W	Weight
	(in.)		L		(DN)	ı	_					(kg)
CC025	1	411	424	437	25	376	380	660	329	83	262	10.9
CC040	1-1/2	547	560	575	40	507	513	700	450	404	205	20.3
CC050	2	550	563	582	50	513	519	790	452	121	385	21
CC080	3	699	717	727	80	659	675	960	602	174	510	54

- This table only applies to meter material codes "S" and "M". For information about material code "H", please consult Cameron.
- DIN flanges are only available for meter material codes "S" and "M".

Sensor unit: CC025 and CC080 (Low-temperature models) Transmitter: Separately-mounted/ferrule connection type



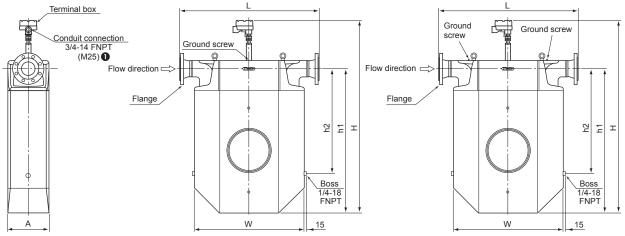
• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

Madal		Ferrule			L4		14/	_	Approx.
Model	Nominal size	Connection 2	L	Н	h1	Α	W	D	Weight (kg)
CC025	25	Ferrule 25 (ISO), IDF 1S	370	660	329	83	262	50.5	8.3
CC040	40	Ferrule 38 (ISO), IDF 1.5S	400	700	452	101	205	50.5	17
CC050	50	Ferrule 51 (ISO), IDF 2S	493	790	452	121	385	64	17
CC080	80	Ferrule 76.1 (ISO), IDF 3S	658.5	960	602	174	510	91	48

<sup>2</sup> Process connection: A = mm, S (sanitary) = in.

# **DIMENSIONS [UNITS IN MILLIMETERS]**

Sensor unit: CC100 and CC250 (Low-temperature models) Transmitter: Separately-mounted/flange connection type



● Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

(CC100, CC150)

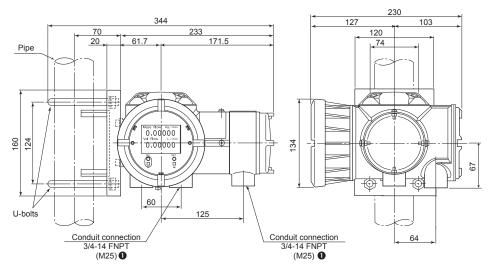
(CC15H through CC250)

Nominal size   Flange rating   ANSI 150   1018     4"	Mardal	FI	lange			1.4	1.0			Approx.	
CC100         4"         ANSI 300         1036         1387         1015         660         300         810           DN100         PN 10, 16         9968         PN 25, 40         994         PN 25, 40         994           ANSI 150         1318         ANSI 300         1338         1387         1015         660         300         810           CC150         PN 10, 16         1250         PN 10, 16         1250         PN 25, 40         1290         ANSI 150         1087         6"         ANSI 300         1107         1588         1190         851         320         810           CC15H         ANSI 600         1157         1588         1190         851         320         810           DN150         PN 10, 16         1019         PN 25, 40         1059         810         810           EC200         ANSI 150         1418         8"         ANSI 300         1438         1588         1190         851         320         810           EC200         PN 25         1374         1390         851         320         810         810           EC20H         PN 25         1374         1388         1418         1390         960	Model	Nominal size	Flange rating <b>0</b>	L	Н	h1	h2	Α	W	Weight (kg)	
CC100			ANSI 150	1018							
DN100		4"	ANSI 300	1036							
CC150    PN 25, 40   994   ANSI 150   1318   ANSI 300   1338   ANSI 600   1388   1387   1015   660   300   810	CC100		ANSI 600	1082	1387	1015	660	300	810	231	
CC150    FN 25, 40   994		DN100	PN 10, 16	968							
CC150  6" ANSI 300 1338 ANSI 600 1388 1387 1015 660 300 810  PN 10, 16 1250 PN 25, 40 1290 ANSI 150 1087 ANSI 600 11157 DN 150 PN 10, 16 1019 PN 25, 40 1059 ANSI 150 1418 ANSI 300 1438 ANSI 600 1438 ANSI 600 1438 ANSI 600 PN 25 1374 PN 10, 16 1338 DN200 PN 25 1374 PN 40 1390 ANSI 150 1418 ANSI 300 1438 ANSI 150 PN 10, 16 1338 DN200 PN 25 1374 PN 40 1390 ANSI 150 1418 ANSI 300 1438 ANSI 300 1438 ANSI 300 1438 ANSI 150 1418 ANSI 300 1438 ANSI 300 1438 ANSI 150 1418 ANSI 300 1438 ANSI 150 1418 ANSI 300 1438 ANSI 300 1438 DN200 PN 25 1374 PN 40 1390 ANSI 150 ANSI 300 1438 DN200 PN 25 1374 PN 40 ANSI 300 1438 DN200 PN 25 1374 PN 40 1390 PN 10, 16 1703 ANSI 300 1805 PN 10 1705 PN 16 1709  1814 1390 960 420 1110		DIVIOU	PN 25, 40	994	]						
CC150         ANSI 600         1388         1387         1015         660         300         810           DN150         PN 10, 16         1250         1290         1015         660         300         810           CC15H         ANSI 150         1087         1087         1588         1190         851         320         810           CC15H         PN 150         PN 10, 16         1019         1588         1190         851         320         810           DN150         PN 25, 40         1059         1418         1588         1190         851         320         810           CC200         PN 25, 40         1059         1418         1588         1190         851         320         810           DN200         PN 25         1374         1588         1190         851         320         810           CC20H         PN 40         1390         1418         1390         960         420         1110           CC250         PN 25         1374         1390         1390         1390         1390         1418         1390         960         420         1110           CC250         PN 10         1705         1814 <td></td> <td></td> <td>ANSI 150</td> <td>1318</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			ANSI 150	1318							
DN150		6"	ANSI 300	1338							
CC15H    CC15H	CC150		ANSI 600	1388	1387	1015	660	300	810	246	
CC15H    PN 25, 40   1290   ANSI 150   1087   ANSI 300   1107   ANSI 600   1157   1588   1190   851   320   810		DN150	PN 10, 16	1250	1						
CC15H         6"         ANSI 300         1107         1588         1190         851         320         810           DN150         PN 10, 16         1019         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059         1059		DIVIOU	PN 25, 40	1290	1						
CC15H         ANSI 600 PN 10, 16 PN 10, 16 PN 25, 40 ANSI 150 ANSI 300 PN 25, 40 ANSI 300 1438 ANSI 600 PN 25 PN 10, 16 PN 40 ANSI 150 ANSI 300 PN 25 PN 40 ANSI 300 ANSI 300 BN 1773 ANSI 300 ANSI			ANSI 150	1087							
CC200         PN 10, 16 PN 25, 40 1059 PN 25, 40 1059 PN 25, 40 1059 PN 25, 40 1418 ANSI 300 1438 ANSI 600 1494 PN 10, 16 1338 PN 40 1390 PN 40 1390         1588         1190         851         320         810           CC20H         PN 25 1374 PN 40 1390 PN 10, 16 1338 ANSI 300 1438 PN 10, 16 1338 PN 40 1390 PN 25 1374 PN 40 1390 PN 25 1374 PN 40 1390 PN 10 1705 PN 10 1705 PN 16 1709         1814 1390 960 420 1110 PN 110 PN 16 1709 PN 16 1709 PN 16 1709		6"	ANSI 300	1107							
CC200    R	CC15H		ANSI 600	1157	1588	1190	851	320	810	310	
CC200    R		DN450	PN 10, 16	1019	1						
1588     1190     851     320     810 <td and="" branch="" fight="" of="" p<="" points="" rowspan="8" state="" td=""><td></td><td>DIVIO</td><td>PN 25, 40</td><td>1059</td><td>1</td><td></td><td></td><td></td><td></td><td></td></td>	<td></td> <td>DIVIO</td> <td>PN 25, 40</td> <td>1059</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td>		DIVIO	PN 25, 40	1059	1					
CC200  ANSI 600 1494 PN 10, 16 1338 PN 10, 16 1338 PN 40 1390  8" ANSI 150 1418 ANSI 300 1438 PN 10, 16 1338 ANSI 300 1438 PN 40 1390 PN 25 1374 PN 40 1390  CC20H  DN200 PN 25 1374 PN 40 1390  10" ANSI 150 1773 ANSI 300 1805 PN 10 1705 PN 16 1709  1814 1390 960 420 1110				ANSI 150	1418		4400				
PN 10, 16			8"	ANSI 300	1438			054		040	
DN200 PN 10, 16 1338 PN 40 1390  8" ANSI 150 1418 ANSI 300 1438 PN 10, 16 1338 PN 10 1773 ANSI 150 1773 ANSI 300 1805 PN 10 1705 PN 16 1709 PN 16 1709 PN 16 1709		00000		ANSI 600	1494	4500			220		240
PN 40   1390		CC200		PN 10, 16	1338	1588	1190	851	320	810	340
1418       ANSI 300     1438       PN 10, 16     1338       PN 25     1374       PN 40     1390       ANSI 150     1773       ANSI 300     1805       PN 10     1705       PN 16     1709       1814     1390       960     420       1110			DN200	PN 25	1374	1					
CC20H    DN200				PN 40	1390	1					
CC20H    DN200   PN 10, 16   1338   1814   1390   960   420   1110			0"	ANSI 150	1418						
DN200 PN 25 1374 PN 40 1390  ANSI 150 1773 ANSI 300 1805 PN 10 1705 PN 16 1709  BN250 PN 16 1709  DN250 PN 16 1709		8"	ANSI 300	1438	1						
PN 40 1390  10" ANSI 150 1773  ANSI 300 1805  PN 10 1705  PN 16 1709  1814 1390 960 420 1110	CC20H		PN 10, 16	1338	1814	1390	960	420	1110	610	
CC250  ANSI 150 1773 ANSI 300 1805 PN 10 1705 PN 16 1709  ANSI 300 1814 1390 960 420 1110		DN200	PN 25	1374	1						
CC250 ANSI 300 1805 PN 10 1705 PN 16 1709 PN 16 1709 PN 16 1709			PN 40	1390	1						
CC250 ANSI 300 1805 PN 10 1705 PN 16 1709 1814 1390 960 420 1110		10"	ANSI 150	1773							
CC250 PN 16 1709 1814 1390 960 420 1110		10	ANSI 300	1805	1						
DN250 PN 16 1709	00050		PN 10	1705	1011	4200	000	400	1110	050	
DIN250 PN 25 1745	GG250	DNOEO	PN 16	1709	1814	1390	960	420	7770	650	
		DN250	PN 25	1745	1						
PN 40 1779			PN 40	1779	1						

<sup>•</sup> For specifications of other flange ratings, see the approval drawing (or delivery specification).

# **DIMENSIONS [UNITS IN MILLIMETERS]**

# Separately-located transmitter

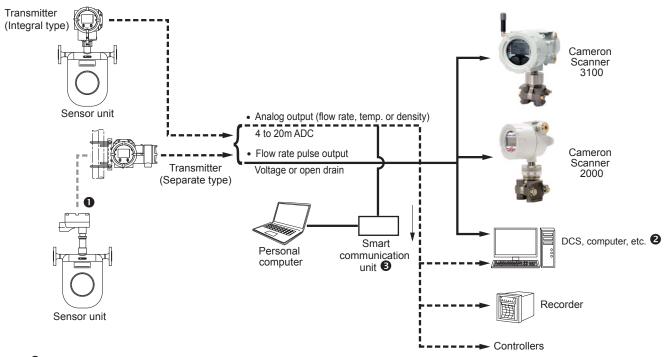


• Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

Pipe mounting hardware (U-bolts) are furnished as standard accessories. The pipe must be provided by the customer.

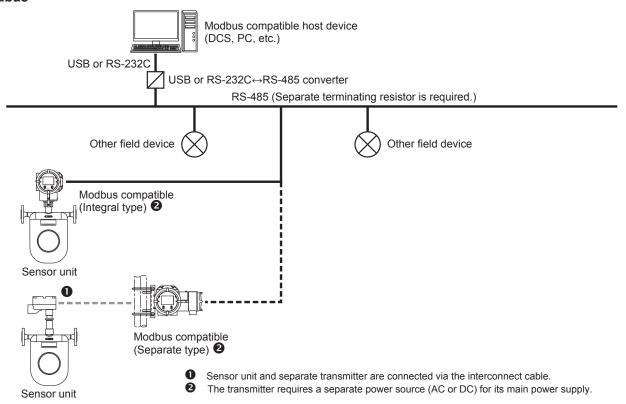
# REMOTE MEASURING SYSTEM

# **HART Protocol**



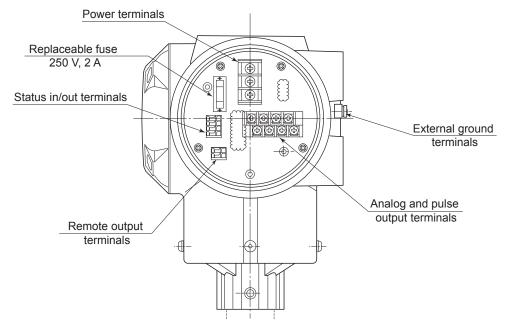
- In case of the separate type, the sensor unit and transmitter are connected with interconnect cable.
- 9 For detailed information about companion instruments, see respective product catalogs and general specification sheets.
- 3 Communications via hybrid Bell 202 over HART.

#### Modbus



# **WIRING DIAGRAM**

# **Transmitter Power and Input/Output Signal Wiring**

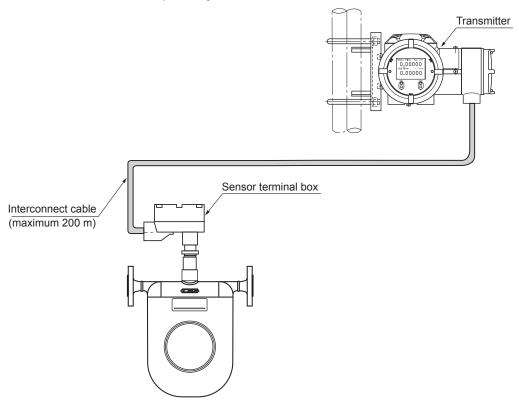


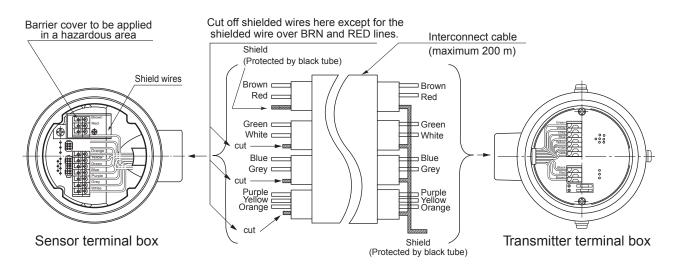
# **Transmitter Identification and Description**

Item	Label	Description	Remarks
	A1 (+)	Analog Output 1 (4 to 20 mA)	Maximum load resistance is $600\Omega$ for Analog Outputs 1 and 2.
	A1 (–)	Analog Output 1 (4 to 20 IIIA)	
	A2 (+)	Analog Output 2 (4 to 20 mA)	
	A2 (–)	Analog Output 2 (4 to 20 mA)	
	P1 (+)	Pulse Output 1	Maximum pulse output (voltage/open drain) transmission
	P1 (–)	(voltage/open drain)	length: - 10 m @ 10 kHz
	P2 (+)	Pulse Output 2	• 100 m @ 1 kHz
Signal	P2 (–)	(voltage/open drain)	1 m @ 100 Hz     Minimum conductor size: 0.75 mm²
	SI (+)	Ctatus Innut (contact)	_
	SI (–)	Status Input (contact)	
	SO (+)	Status Output (apan drain)	
	SO (-)	Status Output (open drain)	
	I/O (+)	Expanded Input/Output	For Modbus communications:  Maximum transmission length: 1200 m
	I/O (–)	(Modbus communication, etc.)	Minimum conductor size: 0.75 mm²
	L (+)	Power (with DC power: +)	_
Power	GND	Earth Ground	
	N (–)	Power (with DC power: –)	

#### WIRING DIAGRAM

# Wiring between Sensor Unit and Separately-mounted Transmitter





Use dedicated interconnect cable and prepare shielded wire as follows.

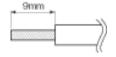
# Transmitter end

- 1. Bundle shielded wires colored in brown/red, green/white, blue/grey and purple/yellow/orange and cover the wires with a black tube.
- 2. Connect only one wire to the terminal box (black), taking care to avoid potential contact with the housing or conductive parts.

#### Sensor end

- 1. Cover the brown/red shielded wire with a black tube and connect it to the terminal box, taking care to avoid potential contact with the housing or conductive parts.
- 2. Clip all shielded wires except brown/red as shown in the above figure.

### Recommended cable end treatment

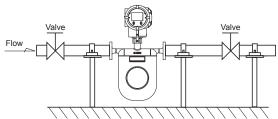


Use of a crimp pin terminal is not necessary.

#### INSTALLATION

#### **Typical Installation**

- Avoid pipeline stresses on the meter.
- The meter should be supported near each process connection, as shown in the illustration on the right.
- 3 Avoid supporting the meter body directly.
- Pipeline should be arranged such that the meter is constantly filled with the process fluid. Avoid, however, installing it in a low point in the piping where slurries may build up.
- Provide a valve downstream of the meter to allow zeroing by obtaining a true zero flow. We recommend providing another valve upstream of the meter for servicing or maintenance.



#### **Precautions at Installation**

- Locate the meter at least 1 meter from large transformers, motors, or other sources of electromagnetic induction. Also avoid installation near sources of excessive vibration, such as motors and pumps.
- In case of measurement of a process fluid which requires heat retention, heat trace may be applied directly to the sensor body. Heat trace should be held below 2 200°C. Explosion-proof models require the temperature to be held below their maximum allowable levels.
- 3. To ensure consistent volume flow and density measurements, heat retention is suggested.
- The sensor unit is of gas-tight construction. To prevent dew condensation inside in a low-temperature application, it is filled with argon gas. To avoid 4. damaging the sensor, do not drop the sensor unit or otherwise subject it to impact shocks.
- 5 In a horizontal run, install the sensor unit with the transmitter up as shown in the typical installation figure.
- 6. A control valve should be located downstream of the meter. In an arrangement where cavitation may possibly take place, locate it at least 5 meters away.
- 7 To ensure consistent and accurate measurement, the Coriolis flow meter should be placed in an environment where pipeline oscillation is held below 0.3G.
- Sudden temperature change may damage the performance of the flow meter. Keep the temperature change of the fluid within ±12°C/minimum for both heating and cooling.

#### **Prevention of Cavitation**

Cavitation can cause a loss of meter accuracy in measurement. Maintain line pressure that will not cause cavitation upstream and downstream of the meter for this reason. Avoid making such an arrangement as to open the line to the atmosphere immediately downstream of the meter. Care must be taken particularly with high vapor pressure liquids. In practice, we recommend to keep the back pressure in the meter (downstream pressure) above the value calculated by the formula below:

 $Pd = 3\Delta P + 1.3Pv$ 

Where Pd: Downstream pressure (MPa[absolute])

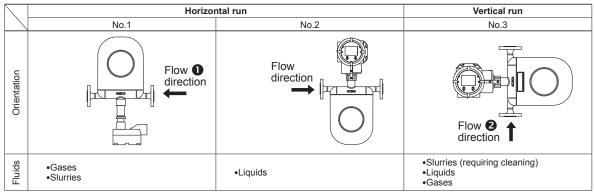
 $\Delta P$ : Pressure loss across the meter (MPa)

Pv: Steam pressure of the process fluid at measurement (MPa[absolute])

#### **Physical Orientation**

## CC003 through CC250

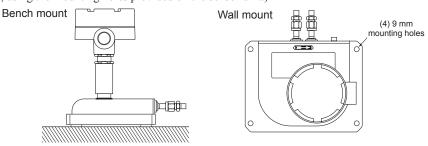
Recommended physical orientation varies with the type of process fluid. [No. 2 in the figure below shows basic orientation for liquid service.]

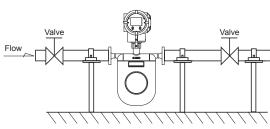


- For installation orientation in No. 1, Cameron recommends the separately-mounted transmitter. If the integrally-mounted transmitter is preferred, contact Cameron.
- The measuring tube of the CC003 is in double-loop configuration without self-draining feature.
  - Do not forget to specify the physical orientation when you order.

#### CC00A and CC001

The instrument can be installed either on a bench or a wall. The following physical orientation is suggested. (In wall mounting, secure the instrument with bolts, using the mounting holes provided on the sensor unit.)





#### **EXPLOSION-PROOF SPECIFICATIONS**

#### **CSA**

#### **Integral type**

- Transmitter symbol: Class I, Zone 1, Ex d ib IIB T4 Gb
  - Class I. Zone 1. AEx d ib IIB T4 Gb
- Transmitter and sensor ambient temperature: -40°C to 55°C
- Fluid temperature: –40°C to 80°C

- Sensor symbol: Class I, Zone 1, Ex ib IIB T4 Gb
  - Class I, Zone 1, AEx ib IIB T4 Gb
- Sensor to be connected: CC006 through CC150
- · Communication: HART, Modbus

#### Separate type

- Transmitter symbol: Class I, Zone 1, Ex d [ib] IIB T6 Gb
   Class I, Zone 1, AEx d ib IIB T4 Gb
- Transmitter ambient temperature: –40°C to 55°C
- Sensor symbol: Class I, Zone 1, Ex ib IIC T1, T2, T3, T4, T5 Gb
   Class I, Zone 1, AEx ib IIC T1, T2, T3, T4, T5 Gb
- Communication: HART. Modbus

#### **Meter combinations**

	Mete	r Temperature Cate	egory	Haz	ardous Loca	Class		
Model	Model Code Temp Category	Description	Nominal Media Temp (°C)	Model Code Temp Class	Description	Media Temp (°C)	Ambient Temp (°C)	Transmitter Mounting
CC00A and CC001	2	Standard B	Under 200°	3	Class T3	-40° to 150°	-40° to 60°	Separate transmitter
CC003	2	Standard B	Under 200°	2	Class T2	-40° to 200°	-40° to 60°	Separate transmitter
CC025 through CC080	1	Standard A	Under 130°	4	Class T4	-40° to 80°	-40° to 60°	Integral transmitter
	1	Standard A	Under 130°	4	Class T4	-40° to 80°	-40° to 60°	Separate transmitter
	2	Standard B	Under 200°	3	Class T3	-40° to 150°	-40° to 60°	Separate transmitter
	3	High Temp	Under 350°	1	Class T1	-20° to 350°	-20° to +50°	Separate transmitter
	4	Low Temp	-200° to 50°	5	Class T5	-200° to 50°	-20° to +50°	Separate transmitter
CC100 through CC150	2	Standard B	Under 200°	4	Class T4	-40° to 80°	-40° to 60°	Integral transmitter
	2	Standard B	Under 200°	2	Class T2	-40° to 200°	-40° to 60°	Separate transmitter
	3	High Temp Under 350°		1	Class T1	-20° to 350°	-20° to +50°	Separate transmitter
	4	Low Temp -200° to 50°		5	Class T5	-200° to 50°	-20° to +50°	Separate transmitter

Meter Temperature Category describes the nominal temperature rating of the meter with no consideration for hazardous area certification.

Hazardous Location Temperature Class describes "T" codes or temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification.

If a meter will be used in a process with temperature lower than -30°C, Charpy impact testing is required. CSA certification is pending for models CC15H, CC200, CC20H, and CC250.

# ATEX/IECEx

#### Integral type

- Transmitter symbol: IIG2 Ex d ib IIC T4 Gb
- Sensor symbol: II2G Ex ib IIC T4
- Transmitter and sensor ambient temperature: –40°C to 55°C
- Explosion-proof applied temperature: 59°C
- Fluid temperature: –40°C to 80°C
- Sensor to be connected: CC006 through CC250
- Communication: HART, Modbus

#### Separate type

- Transmitter symbol: II2G Ex d [ib] IIC T6 Gb
- Sensor symbol: II2G Ex ib IIC T4

- Transmitter ambient temperature.: -40°C to 55°C
- Communication: HART, Modbus

#### **Meter combinations**

	Mete	r Temperature Cat	egory	Haz	ardous Locat	Class		
Model	Model Code Temp Category	Description	Nominal Media Temp (°C)	Model Code Temp Class	Description	Media Temp (°C)	Ambient Temp (°C)	Transmitter Mounting
CC00A and CC001	2	Standard B	Under 200°	3	Class T3	-40° to 150°	-40° to 60°	Separate transmitter
CC003	2	Standard B	Under 200°	2	Class T2	-40° to 200°	-40° to 60°	Separate transmitter
CC025 through CC080	1	Standard A	Under 130°	4	Class T4	-40° to 80°	-40° to 60°	Integral transmitter
	1	Standard A	Under 130°	4	Class T4	-40° to 80°	-40° to 60°	Separate transmitter
	2	Standard B	Under 200°	3	Class T3	-40° to 150°	-40° to 60°	Separate transmitter
	3	High Temp	Under 350°	1	Class T1	-20° to 350°	-20° to +50°	Separate transmitter
	4	Low Temp	-200° to 50°	5	Class T5	-200° to 50°	-20° to +50°	Separate transmitter
CC100 through CC150	2	Standard B	Under 200°	4	Class T4	-40° to 80°	-40° to 60°	Integral transmitter
	2	Standard B	Under 200°	2	Class T2	-40° to 200°	-40° to 60°	Separate transmitter
	3	High Temp	Under 350°	1	Class T1	-20° to 350°	-20° to +50°	Separate transmitter
	4	Low Temp	-200° to 50°	5	Class T5	-200° to 50°	-20° to +50°	Separate transmitter
CC15H through CC250	2	Standard B	Under 200°	4	Class T4	-40° to 80°	-40° to 60°	Integral transmitter
	2	Standard B	Under 200°	2	Class T2	-40° to 200°	-40° to 60°	Separate transmitter
	4	Low Temp	-200° to 50°	5	Class T5	-200° to 50°	-20° to +50°	Separate transmitter

Meter Temperature Category describes the nominal temperature rating of the meter with no consideration for hazardous area certification.

Hazardous Location Temperature Class describes "T" codes or temperature limitations that apply if the meter is installed in a hazardous area, per the ATEX/IECEx certification. If a meter will be used in a process with temperature lower than -30°C, Charpy impact testing is required.

# Appendix B: Product Codes and Inquiry Form PRODUCT CODE (STANDARD AND LOW-FLOW METERS)

Item	1 2	2		-	6				t Co		2 42	. 44	15	16	17	10	Description				Avai	ilabil	ity (	Y/N)		
Model	1 2 C C	3	4	5	б	7	δ	9	10 ′	11 1	Z 13	14	Т5	16	Т/	18	CamCor CT Series Coriolis Flow Meter									
viouei	1010	0	0	Α	+	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	$\vdash$				0.75 mm sensor; 1/4-18 NPT threaded cor	nection	-					<662°F)		
		0	0	1	+	$\dashv$	$\dashv$	$\dashv$	+								1 mm sensor; 1/4-18 NPT threaded conne		-							
		0	0	3	+	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	Н				3 mm sensor; 1/2" flange	Juo!!					0	(Hi-temp,		1
		0		-	-	$\dashv$	$\dashv$	$\dashv$	+	_	+	+							-				CC080	유		
Connec	tion	-	0	6	+	$\dashv$	$\dashv$	$\dashv$	+	+	+	+					6 mm sensor; 1/2" flange		-					딍	Ę,	
nominal		0	1	0	_	4			_								10 mm sensor; 1/2" flange		-				CC050,	CC050	<662°F)	١
(mm) <b>1</b>		0	1	5	_	4	$\dashv$	$\dashv$	$\perp$	_	$\perp$	-					15 mm sensor; 1" flange						,	ŏ		
		0	2	5	4	4			4	_	$\perp$						25 mm sensor; 1" flange		CC001			CC015	CC040,	CC040,	CC080 (Hi-temp,	
		0	4	0													40 mm sensor; 1-1/2" flange						၁၁	8	Ė	l
		0	5	0													50 mm sensor; 2" flange		CC00A,	CC003	90000	CC010,	CC025,	CC025,	080	
		0	8	0													80 mm sensor; 3" flange		၁	ဗ	ဗ	ဗ	၁၁	ဗ	္ပင္ပ	
Fluid ca	teaorv				L	$\Box$	$\Box$	$\Box$	$\perp$		$\perp$						Liquid service		Υ	Υ	Υ	Υ	Υ	Υ	Υ	L
					G	1	$\dashv$	$\dashv$	+	+	+	+		_			Gas service Standard A (media under 266°F/130°C)		Y N	Y N	Y	Y	Y	N N	N N	ŀ
						2	+	+	+		+	+					Standard B (media under 392°F/200°C)		Y	Y	Y	Y	Y	N	N	H
Tempera	ature ca	tego	ry	2		3											High-temperature (media under 662°F/350	°C)	N	N	N	N	N	Υ	Υ	İ
						4			_								Low-temperature (media –328°F to 122°F/	–200°C to 50°C)	N	N	N	N	N	N	N	L
Pressur	e catego	ory				ŀ	1	-	-								Standard		Y	Y	Y	Y	Y	Y	Y	ŀ
	- 5	_					3		+	+	+	+	Н		$\dashv$		High-pressure service <b>3</b> SUS316L		N	N	N	Y	N	N Y	N	
							+	S M	+	+	+	+	Н		$\dashv$		Hastelloy C22 (sensor)/SUS316L (manifole	and end connections)	Y N	Y	Y	Y	Y	Y N	Y	H
Netted	material	s					ŀ	Н									Hastelloy C22 4	and end connections)	N	Y	Y	Y	Y	N	Y	t
							ŀ	z	$\pm$		+						Other than above		Y	Y	Y	Y	Y	Y	Y	H
									Α								Threaded		Υ	Υ	Υ	Υ	N	N	N	İ
									В								Ferrule		N	Υ	Υ	Υ	Υ	N	N	L
								-	H	_	+	+					ANSI 150		N	Y	Y	Y	Y	Y	Y	ŀ
								ŀ	J K		+	+					ANSI 300 ANSI 600		N	Y	Y	Y	Y	Y	Y	ŀ
Process	connec	tion	1					ı	T		+						ANSI 900 <b>5</b>		N	Y	Y	Y	Y	Y	Y	r
								ŀ	P								DIN PN10		N	Y	Y	Y	Y	Y	Y	
								İ	Q								DIN PN16		N	Υ	Υ	Υ	Υ	Υ	Υ	İ
									R								DIN PN25		N	Υ	Υ	Υ	Υ	Υ	Υ	L
								-	S								DIN PN40		N	Y	Y	Y	Y	Y	Y	
				_					-	1	+	+					Other than above Integrally-mounted		N	N	Y	Y	Y	N	N	H
Transmi	tter mo	unti	ng (	0						2							Separately-mounted		Y	Y	Y	Y	Y	Y	Y	H
Power s	ource										1						20 to 30 VDC								=	
										2	2	+					85 to 264 VAC, 50/60 Hz (Safety rated 100									_
											B	_					Output 1: Mass flow Output 1: Mass flow	Output 2: Mass flow Output 2: Density								-
											C						Output 1: Mass flow	Output 2: Temperatur	e							_
											D	_					Output 1: Mass flow	Output 2 : Volume flo								Ξ
Analog	outout (	7	3								E				_		Output 1: Mass flow	Output 2 : Volume flor		ced o	dens	ity)				_
Analog	output										F	-		_			Output 1: Density Output 1: Volume flow (live density)	Output 2 : Temperatu Output 2 : Density (liv		neit	/)					-
											Н						Output 1: Volume flow (fixed density)	Output 2 : Density (IIV	e ue	iioity	()					-
											J						Output 1: Volume flow (live density)	Output 2 : Temperatu								_
											K	_					Output 1: Volume flow (fixed density)	Output 2 : Temperatu	re							_
												В			_		Output 1: Mass flow Output 1: Volume flow (live density)	None None					e:	ngle	, pul	_
												С					Output 1: Volume flow (fixed density)	None					31	rigie	puis	5
												D					Output 1: Mass flow	Output 2 : Mass flow								_
Dulas o	utput <b>7</b>	ខ										Е					Output 1: Mass flow	Output 2 : Volume flor								
uise O	atput 🕨	. •										F	Н				Output 1: Mass flow Output 1: Volume flow (live density)	Output 2 : Volume flor			_		_	)ual	nula	_
												Н	Н		$\dashv$		Output 1: Volume flow (fixed density)  Output 1: Volume flow (fixed density)	Output 2 : Volume flor Output 2: Volume flor					[	udl	puis	e
												J	H				Output 1: Volume flow (live density)	Output 2 : Mass flow	. , , , , ,	<i>5</i> 4 4	3.101	-1/				
												K					Output 1: Volume flow (fixed density)	Output 2 : Mass flow								
Pulse o	utput ty	эе											1		_		Open collector pulse									_
		_											2	1	$\dashv$		Voltage pulse HART communication (Hybrid Bell 202)									_
Commu	nication	int	erfa	се										4	$\dashv$		Modbus communication (RS-485)									_
Evels - '	nn	F p 1	ir-											•	2		ATEX, IECEX			_	_					-
-xpiosi	on-proo	rat	ıng												4		CSA								_	_
																1	Sensor: T1 (separate transmitter only, high				ugh	CCO	80 o	nly)		_
							4	ล								3	Sensor: T2 (separate transmitter only, mod Sensor: T3 (separate transmitter only, all n		50 0	nly)						_
=xplosi	on-proo	ter	npe	ratu	ire c	las	ss <b>(</b>	9							-	4	Sensor: 13 (separate transmitter only, all n Sensor: T4 (integral transmitter, not availal		arot.	ıra m	nnde	le)				_
																		DE TOLIOW- OF HIGH-TERMS	-1121111							

- Other connections available for Models CC003 through CC080
- 2 Explosion-proof specification has restrictions on temperature class. Refer to Explosion-proof Specifications, page 22 and page A-22 for details.
- If "High-pressure Service" is selected, "Threaded" is the only valid process connection.
- If wetted material "H" is selected for Model CC006, the unit will be provided with a "floating" flange connection.
- 6 ANSI Class 900 flanges require Hastelloy C22 sensor material; therefore, wetted material "H" or "M" must be selected.
- 6 If fluid temperature exceeds 176°F (80°C), a separately-mounted transmitter must be selected. Sensor-to-transmitter cable is ordered separately see page B3.
- If "Volume flow (fixed density)" is selected for analog outputs and/or pulse outputs, the volume rate calculation will be based on the fixed (not live) density value.
- 3 "Volume flow (fixed density)" and "Volume flow (live density)" cannot be used simultaneously for analog outputs and/or pulse outputs. User must choose one or the other.

# PRODUCT CODE (HIGH-FLOW METERS)

Item 1 2	3_	4								Coc 12 -		14_	15_1	6_1	7_ <b>1</b>	8_	Description		Ava	ailability (\	Y/N)
Model C C							-J			-7-2				· I			CamCor CT Series Coriolis Flow Meter		<b>–</b>		ć.
	1	0	0							Т	Т	Т		Т	Т	Т	100 mm sensor; 4" flange		CC15H,	_	CC150, CC15H, CC200, CC20H, CC250
	1	5	0											T		1	150 mm sensor; 6" flange		8,8	CC100, CC150 (High-temperature, <662°F)	S.
Connection	1	5	Н							$\top$	1	1	$\top$	Ť	$^{\dagger}$	$\rightarrow$	200 mm sensor; 6" flange		CC150, C	150 erat	15H 250
ominal size	2	0	0							$\top$	1	1	$\top$	$^{\dagger}$	$\top$	$\rightarrow$	200 mm sensor; 8" flange		88	S &	8 8
mm)	2	0	Н							1	$^{\dagger}$	$\forall$	$\dashv$	$^{+}$		$\rightarrow$	250 mm sensor; 8" flange		CC100, CC200,	00, h-te	50, 0H,
	2		0							$\dashv$	+	$\dashv$	+	+	+	$^{+}$	250 mm sensor; 10" flange		5 5	15 Hig 86	55
Fluid category			0	L						$\dashv$	+	+	+	+	+	$^+$	Liquid service		Y	Y	Y
iuiu category				_	2		_			+	+	$\dashv$	+	+	+	$\rightarrow$	Standard B (media under 392°F/200°C)		Y	N	N
		•			3					+	+	+	+	+	+	$\rightarrow$	High-temperature (media under 662°F/350	١٠٠٠	N	Y	N
Temperature categ	ory	U			$\vdash$					+	+	+	+	+	+	$^{+}$					
					4	1				-	+	+	+	+		$\rightarrow$	Low-temperature (media –328°F to 122°F	-200 C to 50 C)	N Y	N Y	Y
Pressure category				_		1	_		_	+	+	$\dashv$	+	+	+	$\rightarrow$	Standard				
Netted materials							S			_	+	_	+	+	_	$\rightarrow$	SUS316L		Y	Y	Y
								Н		_	_		+	+	-	$\rightarrow$	ANSI 150		Y	Y	Y
								J		_	4	4	_	+	_	4	ANSI 300		Y	Y	Y
								K									ANSI 600 <b>2</b>		Υ	Y	Y
Propose service.								Р		1			$\top$	$\top$	1	$\rightarrow$	DIN PN10		Υ	Y	Υ
Process connection	n							Q		$\top$	$\dashv$	$\dashv$	+	$\top$	$\dagger$	$\rightarrow$	DIN PN16		Y	Y	Y
								R	H	+	$\dashv$	$\dashv$	+	+	+	$\rightarrow$	DIN PN25		Y	Y	Y
								S	-	+	+	$\dashv$	+	+	+	$\rightarrow$	DIN PN40		Y	Y	Y
								Z		+	+	+	+	+	+	$\rightarrow$	Other than above		Y	Y	Y
										$\dashv$	+	$\dashv$	+	+	+	+					
Fransmitter mount	₿								1	-	-	_	+	+	+	$^{+}$	Integrally-mounted		Y	N	N
	_								2	_	_	_	4	+	_	$\rightarrow$	Separately-mounted		Y	Y	Y
Power source										1	4	$\dashv$	$\perp$	4	4	4	20 to 30 VDC				
										2	_	_	_	4		4	85 to 264 VAC, 50/60 Hz (Safety rated 100	) to 240 VAC)			
											Α						Output 1: Mass flow	Output 2: Mass flow			
										L	В			$\perp$			Output 1: Mass flow	Output 2: Density			
											С						Output 1: Mass flow	Output 2: Temperate	ıre		
											D			Τ		Т	Output 1: Mass flow	Output 2 : Volume fl	ow (live de	ensity)	
_											Е						Output 1: Mass flow	Output 2 : Volume fl	ow (fixed o	density)	
Analog output 4	6									F	F			T		$^{+}$	Output 1: Density	Output 2 : Temperat	•		
										H	G	$\dashv$	+	$^{+}$	+	$\rightarrow$	Output 1: Volume flow (live density)	Output 2 : Density (		<i>(</i> )	
										H	Н	$\dashv$	+	+	+	$\rightarrow$	Output 1: Volume flow (fixed density)	Output 2 : Density		,	
										H	J	$\dashv$	+	+	+	$^+$			uro		
										- 1-	$\rightarrow$	$\dashv$	+	+	+	$^{+}$	Output 1: Volume flow (live density)	Output 2 : Temperat			
				_			_				K	_	+	+	+	$\rightarrow$	Output 1: Volume flow (fixed density)	Output 2 : Temperat	ure		Ι
											- 1	A	+	+	-	$\rightarrow$	Output 1: Mass flow	None			Singl
											H	В	4	+		$\rightarrow$	Output 1: Volume flow (live density)	None			puls
											-	С	4	_	_	4	Output 1: Volume flow (fixed density)	None			
												D	_	1	_	$\perp$	Output 1: Mass flow	Output 2 : Mass flow	V		
	•										- 1	E		$\perp$	$\perp$	_	Output 1: Mass flow	Output 2 : Volume fl	ow (live de	ensity)	
Pulse output 4												F					Output 1: Mass flow	Output 2 : Volume fl	ow (fixed o	density)	
												G					Output 1: Volume flow (live density)	Output 2 : Volume fl	ow (live de	ensity)	Dua puls
												Н	$_{\perp}T$	T	$_{\perp}$ T	T	Output 1: Volume flow (fixed density)	Output 2: Volume flo	ow (fixed d	ensity)	Puis
												J		$\top$	$\top$		Output 1: Volume flow (live density)	Output 2 : Mass flow	V		
											İ	к	$\top$	$\top$	$\top$	$\rightarrow$	Output 1: Volume flow (fixed density)	Output 2 : Mass flow			1
						-						$\dashv$	1	$\top$	$\top$	$^{+}$	Open collector pulse				
Pulse output type												-	2	+	+	$\rightarrow$	Voltage pulse				
													$\rightarrow$	1	+	$\rightarrow$	HART communication (Hybrid Bell 202)				
Communication in	terfa	ace											$\vdash$	4	+	$\rightarrow$	Modbus communication (RS-485)				
														+	2	$^{+}$	` '			-	
Explosion-proof ra	ting	ı												$\vdash$	4	$\rightarrow$	ATEX, IECEX				
															+	$\rightarrow$	CSA	. Annual control of the Control	20400 "		0!
															$\vdash$	$\rightarrow$	Sensor: T1 (separate transmitter only, high		C100 thro	ugn CC250	only)
						_									$\vdash$	$^{+}$	Sensor: T2 (separate transmitter only, all r				
xplosion-proof te	mpe	erati	ure	clas	ss (	O									:	3	Sensor: T3 (separate transmitter only, all r	nodels)			
															4	4	Sensor: T4 (integral transmitter, not availa	ble for low- or high-tem	perature m	nodels)	
																5	Sensor: T5 (separate transmitter only, low-	temperature models C	C025 throu	igh CC250	only)
D Explosion-proc	of sn	ecifi	catio	on h	าลร	resti	ricti	one	on :	emr	era	ture	cla	SS F	Refe	er t	Explosion-proof Specifications, page 22	and page A-22 for detail	ls. CSA ce	rtification fo	or
models CC15h									J11	i	Jid		Jiu	. J. I	.010	٠. د١	p.co.co. p.co. opcomounding, page 22 (	pago / LE loi detai	55,706		
2 ANSI class 600	) is i	not a	avail	able	e or	n mo	odel	s C	220	H or	CC	250									
101 01433 001														tra	nsm	nitte	er must be selected. Sensor-to-transmitter	cable is ordered separa	itely – see	page B3	
If fluid tempera		JAU	Jou	- 11		, , , , ,	- 0	,, u	P	ut	y -1							Jiaoi ou Jopai	, 300	F-50 DO.	
		ed d	ensi	itv)"	' is o	sele	cter	d for	ans	nole	Out	otije	and	/or	pule	se r	outputs, the volume rate calculation will be	based on the fixed (not	live) dens	ity value	

# PRODUCT CODE (TRANSMITTER)

		_			<u> </u>										
Item		Transmitter Product Code													
item	1	2	3	4	5	6									
Model	PA0K						Transmitter								
Mauntina		1					Integral								
Mounting		2					Separate								
Innut Daws	_		1				20 to 30 VDC								
Input Powe	r		2				100 to 240 VAC								
D. I O. 4-				1			Open Collector Pulse								
Pulse Outp	ut			2			Voltage Pulse								
Communic	ation Int				1		HART								
Communic	ation in	eria	ace		4		HART/Modbus								
Hazardous	Lacatio					2	CSA								
nazardous	Locatio	п				4	ATEX, IECEx								

Interconnect Cable (for separately -mounted transmitter)
The interconnect cable (9-core with PVC coating) is sold as a separate line item:
Part No. CBP2-XXX where XXX is meter length*
Minimmum meter length: 10 meters Available in 5 meter increments thereafter; maximum 200 m
* For example, product code CBP2-010 is for an interconnect cable 10 meters long.

# PRODUCT INQUIRY FORM

# PLEASE SUPPLY THE FOLLOWING INFORMATION WHEN YOU INQUIRE

Complete the following form (to the extent possible) by filling in the blanks and checking the applicable boxes. Additional information will be provided during your personal consultation.

1. Model code	CC			
2. Process fluid	Name:		_ Density:	Viscosity:
3. Flow range	Maximum	Normal	Minimum _	Unit (lbm/hr, bbl/hr, etc.)
4. Fluid temperature	Maximum	Normal	Minimum _	Unit (°F or °C)
5. Operating pressure	Maximum	_ Normal	Minimum	Unit (psi, barg, kPa, kg/cm2)
6. Ambient temperature	Maximum	Normal	Minimum _	Unit (°F or °C)
7. Fluid flow direction	☐ Left to Right □	☐ Right to Left	☐ Bottom to Top	☐ Top to Bottom (Orientation: See page 21)
8. Nominal size	in. or	mm		
9. Required accuracy	±% of rea	ading ±	% of full scale	
10. Process connection	☐ Flange type/ratin	g	_   Threaded	□ Ferrule
11. Explosion-proof	□ CSA □ ATEX		Not required	
12. Power supply	□AC □DC .	Volts		
		Output Form: D	Active voltage	Open collector
	Pulse output		ass rate □ Volume ass rate □ Volume	
		Output 1Output 2	Pulses per Pulses per	
13. Output specifications				e rate ☐ Temperature ☐ Density e rate ☐ Temperature ☐ Density
	Analog output			mADC = mADC =
	Flow damping	second	s (selectable from	0 to 200 seconds; default is 0.8 seconds)
	Alarm output	Low = High =	_ (g/ml, SG, lbm/ft3 _ (g/ml, SG, lbm/ft3	3, etc.) Default is 0.3 g/ml. 3, etc.) Default is 2.0 g/ml.
14. Communication protocol	□HART □Modb	us (Slave Address	:)	
15. Transmission length	Distance from sens Distance from trans			Unit (ft, m)
16. Receiving device		dicator   Record		oller □ Batch controller □ Density computer
17. Interconnect cable length	For separately-mou	inted transmitter: 0	CBP2m	(Minimum: 10 m; Maximum 200 m)
18. Remote mount bracket	☐ Remote mount b	racket for wall mo	unt or 2" pipe mour	nt (for remote mount transmitters only)
19. Number of units required				
20. Application				
21. Other considerations				

Special fluids, such as high viscosity fluids or slurries, should be stated precisely and in detail.

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MEASUREMENT SYSTEMS

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