

+ CamCor™ CT Series Meters

High-Performance Coriolis Flow Meters



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**
- + 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 (connection faults, pipeline vibration, media pulsation, etc.)**
- + Enhanced maintenance functions (event/user change logging and downloads, recoverable factory configuration and calibration, etc.)**
- + User-configurable 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

| Meter type | Model | Size (in.) | Guaranteed minimum rate (lb/min) | Minimum setting rate (lb/min) | Maximum service rate (lb/min) | Maximum allowable rate (lb/min) | Uncertainty (5) | | Repeatability (5) | | Zero stability (lb/min) | Analog output uncertainty |
|------------------------------|-------|------------|----------------------------------|-------------------------------|-------------------------------|---------------------------------|----------------------------|------------------------|---------------------------|---------------------------|-------------------------|---------------------------|
| | | | | | | | Liquids | Gases | Liquids | Gases | | |
| Low-flow | CC00A | 1/4 | 0.00088 | 0.0044 | 0.088 | 0.132 | ±0.2% of reading (±ZS) (5) | ±0.5% of reading (±ZS) | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.000013 | ±0.1% of full scale |
| | CC001 | | 0.0033 | 0.0165 | 0.33 | 0.496 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.00005 | |
| | CC003 | 1/2 | 0.026 (0.033) (1) | 0.13 | 2.65 | 5.29 (6.61) (1) | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.000066 | |
| | CC006 | 1/2 | 0.132 | 0.66 | 13.23 | 26.46 | ±0.1% of reading (2) | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.00066 | |
| | CC010 | 1/2 | 0.44 | 2.2 | 44.09 | 88.18 | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0022 | |
| | CC015 | 1/2 | 1.32 | 6.61 | 132 | 265 | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0066 | |
| Standard and Low-temperature | CC025 | 1 | 3.97 | 19.8 | 397 | 794 | ±0.1% of reading (±ZS) (4) | – | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0198 | |
| | CC040 | 1-½ | 14.33 | 71.7 | 1433 | 2866 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.071 | |
| | CC050 | 2 | | | | | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.22 | |
| | CC080 | 3 | 44.09 | 220 | 4409 | 8818 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.628 | |
| | CC100 | 4 | 126 | 628 | 12566 | 25133 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 1.286 | |
| | CC150 | 6 | | | | | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 2.572 | |
| | CC15H | 6 | 257 | 1286 | 25721 | 51441 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0396 | |
| | CC200 | 8 | | | | | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.143 | |
| | CC20H | 8 | 514 | 2572 | 51441 | 102883 | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.441 | |
| | CC250 | 10 | | | | | | | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 1.257 | |
| High-pressure | CC010 | ¾ | 0.88 | 4.41 | 30.86 | 61.73 | ±0.2% of reading (±ZS) (5) | ±0.5% of reading (±ZS) | ±0.1% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0077 | |
| | CC015 | ¾ | 2.87 | 14.33 | 93.7 | 187 | | | ±0.1% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0234 | |
| High-temperature | CC025 | 1 | 3.97 | 19.8 | 397 | 794 | ±0.1% of reading (±ZS) | – | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.0396 | |
| | CC040 | 1-½ | 14.33 | 71.7 | 1433 | 2866 | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.143 | |
| | CC050 | 2 | | | | | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.441 | |
| | CC080 | 3 | 44.09 | 220 | 4409 | 8818 | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 1.257 | |
| | CC100 | 4 | 126 | 628 | 12566 | 25133 | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | | |
| | CC150 | 6 | | | | | | | ±0.5% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | | |

- When a maximum allowable range 6.61 lb/min is adopted, the minimum flow rate is 0.033 lb/min.
- ±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 uncertainty of ±0.1% of reading is required, consult Cameron.
- Above maximum service flow rate, the uncertainty is ±0.3% of reading (±ZS).

* 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 = $\frac{\text{Zero stability}}{\text{Current flow rate}} \times 100$

GENERAL PERFORMANCE

Volumetric Flow Rate (1)

| Model | Units | Guaranteed minimum rate | Minimum setting rate | Maximum service rate | Maximum 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 | 1.72 | 8.59 | 172 | 344 |
| CC050 | gal/min | | | | |
| CC080 | bbl/hr | 7.55 | 37.8 | 755 | 1511 |
| CC100 | bbl/hr | 21.5 | 108 | 2153 | 4306 |
| CC150 | bbl/hr | | | | |
| CC15H | bbl/hr | 44.1 | 220 | 4407 | 8813 |
| CC200 | bbl/hr | | | | |
| CC20H | bbl/hr | 88.1 | 441 | 8813 | 17627 |
| CC250 | bbl/hr | | | | |
| CC010* | gal/min | 0.106 | 0.529 | 3.7 | 7.4 |
| CC015* | gal/min | 0.344 | 1.719 | 11.2 | 22.5 |

* High-pressure models

1. 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 (in.) | Metering range | Uncertainty | Analog output uncertainty |
|------------------------------|-------|------------|----------------|--------------|---------------------------|
| Low-flow | CC00A | ¼ | 0.3 to 2g/mL | ±0.003 g/mL | ±0.1% of full scale |
| | CC001 | | | | |
| | CC003 | ½ | | ±0.0005 g/mL | |
| | CC006 | ½ | | | |
| | CC010 | ½ | | | |
| | CC015 | ½ | | | |
| Standard and Low-temperature | CC025 | 1 | 0.3 to 2g/mL | ±0.004 g/mL | ±0.1% of full scale |
| | CC040 | 1-½ | | | |
| | CC050 | 2 | | | |
| | CC080 | 3 | | | |
| | CC100 | 4 | | | |
| | CC150 | 6 | | | |
| | CC15H | 6 | | | |
| | CC200 | 8 | | | |
| | CC20H | 8 | | | |
| High-pressure | CC250 | 10 | | | |
| | CC010 | ¾ | 0.3 to 2 g/mL | ±0.004 g/mL | ±0.1% of full scale |
| CC015 | 3/4 | | | | |
| High-temperature | CC025 | 1 | 0.3 to 2g/mL | ±0.003g/mL | |
| | CC040 | 1-½ | | | |
| | CC050 | 2 | | | |
| | CC080 | 3 | | | |
| | CC100 | 4 | | | |
| | CC150 | 6 | | | |

GENERAL PERFORMANCE

Sensor Unit General Specifications – Low-Flow Models (CC00A, CC001 and CC003)

| Item | | Description | | |
|--------------------------------------|-------------------------|---|-------|-------|
| Model | | CC00A | CC001 | CC003 |
| Nominal size | | ¼" | | |
| Materials | Wetted parts (1) | SUS316L | | |
| | Housing | SUS304 | | |
| | O-rings | Fluoro-elastomer (standard Viton®), PTFE (option) – | | |
| Process connection | | ¼-18 FNPT | | |
| | | ASME 100, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 (3) RF, IDF Ferrule (4) , Threaded | | |
| Applicable fluid | | Liquid and gas | | |
| Density range | | 0 to 2.0 g/mL | | |
| Temperature range | | –328°F to 392°F (5) | | |
| Tube withstand @ 100°F | | — | | |
| Maximum operating pressure @ 100°F | Liquid | 2176 psi | | |
| | Gas | 142 psig | | |
| Sensor housing withstand (6) | | — | | |
| Flow direction | | Bi-directional | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | | |
| Dust-tight, waterproof configuration | | IP66/67 | | |

- When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.
- ASME 900 flanges are only available in Alloy C22 material.
- 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.
- 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)

| Item | | Description | | | | | | |
|--------------------------------------|-------------------------|--|-----------------|----------|-----------------|-------------------|-----------------|-----------------|
| Model | | CC006 | CC010 | CC015 | CC025 | CC040 | CC050 | CC080 |
| Nominal size | | 10 mm, ½", DN15" | 15 mm, ½", DN15 | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 |
| Materials | Wetted parts (1) | SUS316L, Alloy C22 | | | | | | |
| | Housing | SUS304 | | | | | | |
| Process connection | | ASME 150, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 RF (3) ; IDF Ferrule (4) ; Threaded | | | | | | |
| Applicable fluids | | Liquid and gas | | | | | | |
| Density range | | 0 to 2.0 g/mL | | | | | | |
| Temperature range | | –328°F to 392°F (6) | | | | | | |
| Tube withstand @ 100°F | | SUS316L: 1520 psig; Alloy C22: 2276 psig | | | | | | |
| Maximum operating pressure | | Depends on flange rating | | | | | | |
| Sensor housing withstand (5) | | 551 psig | 435 psig | 319 psig | 232 psig | 261 psig | | 203 psig |
| Flow direction | | Bi-directional | | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | | |

- When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.
- ASME 900 flanges are only available in Alloy C22 material.
- 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.
- 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.

GENERAL PERFORMANCE**High-Flow Models (CC100 through CC250)**

| Item | | Description | | | | | |
|--------------------------------------|-------------------------|--|-------------------|-----------|-------------------|-----------|--------------------|
| Model | | CC100 | CC150 | CC15H | CC200 | CC20H | CC250 |
| Nominal size | | 100 mm, 4", DN100 | 150 mm, 6", DN150 | | 200 mm, 8", DN200 | | 250 mm, 10", DN250 |
| Materials | Wetted parts (1) | SUS316L | | | | | |
| | Housing | SUS304 | | | | | |
| Process connection (2) | | ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF | | | | | |
| Applicable fluids | | Liquid | | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | |
| Temperature range | | Maximum 10000 CP | | | | | |
| Tube withstand @ 100°F | | -328°F to 392°F (3) | | | | | |
| Maximum operating pressure | | 1924 psig | | 1551 psig | | 1300 psig | |
| Flow direction | | Bi-directional | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | |

1. When SUS316L is selected for the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.

2. Models CC20H and CC250 available only up to ASME Class 300 flanges.

3. 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.

* For products conforming to the high-pressure gas safety regulations, consult Cameron.

High-Pressure Models (CC010 and CC015)

| Item | | Description | |
|--------------------------------------|--------------|--|-------------|
| Model | | CC010 | CC015 |
| Materials | Wetted parts | Flow Tube and Manifold: Alloy C22 | |
| | Housing | SUS304 | |
| Process connection | | 3/8-18 FNPT | 3/4-14 FNPT |
| Applicable fluids | | Liquid and gas | |
| Density range | | 0.3 to 2.0 g/mL | |
| Temperature range | | Integrally-mounted: -4°F to 194°F; Separately-mounted: -328°F to 392°F | |
| Maximum operating pressure (@ 68°F) | | 5221 psig | 6237 psig |
| Sensor housing withstand (1) | | 435 psig | 319 psig |
| Flow direction | | Bi-directional | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | |
| Dust-tight, waterproof configuration | | IP66/67 | |

1. 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 real For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

GENERAL PERFORMANCE**High-Flow Models (CC025 through CC150)**

| Item | | Description | | | | | |
|--------------------------------------|-------------------------|---|-------------------|-----------------|--------------------|-------------------|-------------------|
| Model | | CC025 | CC040 | CC050 | CC080 | CC100 | CC150 |
| Nominal size | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 | 100 mm, 4", DN100 | 150 mm, 6", DN150 |
| Materials | Wetted parts (1) | SUS316L | | | SUS316L, Alloy C22 | SUS316L | |
| | Housing | SUS304 | | | | | |
| Process connection | | 1" to 3": ASME 150, 300, 600, 900 (4) RF; DIN PN 10, 16, 25, 40 RF 4" and 6": ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF | | | | | |
| Applicable fluids | | Liquid | | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | |
| Temperature range (2) | | –40°F to 662°F | | | | | |
| Tube withstand @ 100°F | | SUS316L: 1520 psig; Alloy C22: 2276 psig | | | | | 1924 psig |
| Maximum operating pressure | | Dependent on flange rating | | | | | |
| Sensor housing withstand (3) | | 232 psig | 261 psig | | 203 psig | — | |
| Flow direction | | Bi-directional | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | |

Optional Heat Tracer Specifications (Available for Models CC025 through CC080) (5)

| | |
|--|--|
| 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 10 mm tubing |

1. When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.

2. Allowable ambient temperature permitted for the sensor unit is up to 122°F.

3. 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.

4. ASME 900 flanges are only available in Alloy C22 material.

5. 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).

GENERAL PERFORMANCE

Low-Temperature Models (CC025 through CC250)

| Item | | Description | | | | | | | | | |
|--------------------------------------|-------------------------|--|-------------------------|--------------------|--------------------|---|----------------------|-----------|--|-----------|--------------------------|
| Model | | CC025 | CC040 | CC050 | CC080 | CC100 | CC150 | CC15H | CC200 | CC20H | CC250 |
| Nominal size | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 | 100 mm, 4", DN100 | 150 mm, 6", DN150 | | 200 mm, 8", DN200 | | 250 mm, 10", DN250 |
| Materials | Wetted parts (1) | SUS316L, Alloy C22 | | | | | SUS316L | | | | |
| | Housing | SUS304 | | | | | | | | | |
| Process connection | | ASME 150, 300, 600, 900 (3) RF; DIN PN 10, 16, 25, 40 RF (2) ; IDF Ferrule (4) | | | | ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF (2) | | | ASME 150, 300 RF; DIN PN 10, 16, 25, 40 RF (2) | | |
| Applicable fluids | | Liquid and gas | | | | | Liquid | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | | | | | |
| Temperature range | | –328°F to 122°F | | | | | | | | | |
| Tube withstand @ 100°F | | 1520 psig | | | | 1924 psig | | 1551 psig | | 1300 psig | |
| Maximum operating pressure | | Dependent on flange rating | | | | | | | | | |
| Sensor housing withstand (5) | | 232 psig | 261 psig | | 203 psig | | – | | | | |
| Flow direction | | Bi-directional | | | | | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page 22 for details. | | | | | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | | | | | |

1. When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.

2. DIN flanges are only available for meter material SUS316L.

3. ASME 900 flanges are only available in Alloy C22 material.

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

5. 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 Cameron.

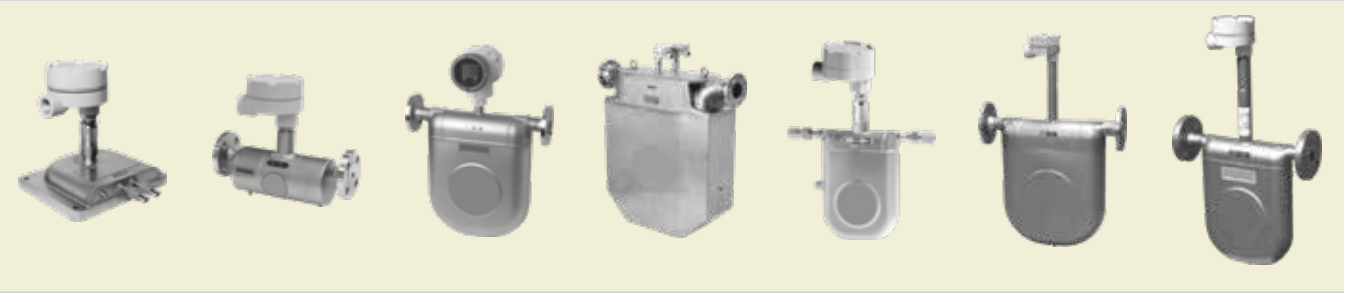
GENERAL PERFORMANCE**Transmitter Specifications**

| 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 (1) |
| Transmission length (separately-mounted) | Maximum 200 m (interconnect 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; EN61326-1: 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 and 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 provided (128x64 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 (5) | HART (Standard) Protocol Version 7, Bell 202 (3) |
| | 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 | Open drain (equivalent to open collector): 10V to 30V, 50 mADC, ON resistance $\leq 0.6 \Omega$ OR Voltage: 1.5V maximum (low level) to 13V minimum (high level), output impedance: 2.2 k Ω ; Setting range: 0.1 to 10000 Hz (Maximum: 11000 Hz) |
| Analog output | 4 to 20 mADC (maximum load: 600 Ω); 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 $\leq 0.6 \Omega$; Select one from error (default) (4) flow direction, or high/low alarm |
| Status input | Contact-closure (Form "a" contact): 200 Ω maximum (short), 100 k Ω minimum (open); Select one output from remote zero, total reset, 0% signal lock, or function off (default) |

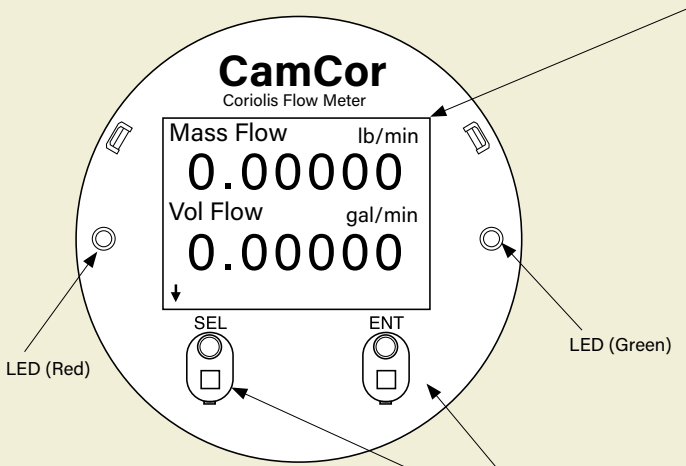
- Below –4°F, the display loses its visibility due to weakened contrast. Both the display and infrared sensor may exhibit slow responses below –4°F.
- If the sensor-to-transmitter communications cable length exceeds 200 meters, consult Cameron.
- HART communications are available only across the Analog Output 1.
- 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 Standard 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" | 1/2" | 1/2" to 3" | 4" to 10" | 3/8" and 3/4" | 1" to 6" | 1" to 10" |
|  | | | | | | |

Display



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)

LED (Red)

LED (Green)

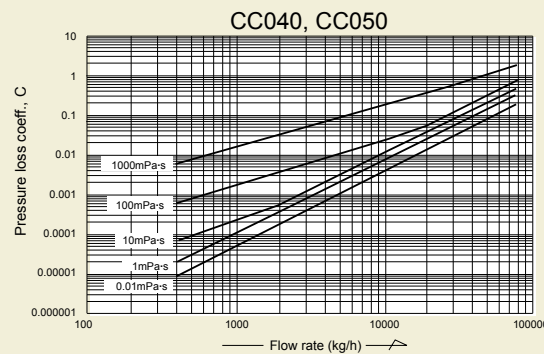
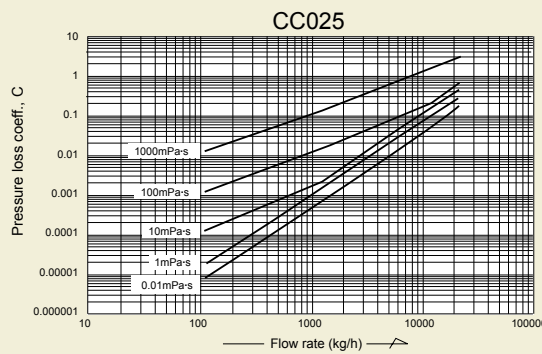
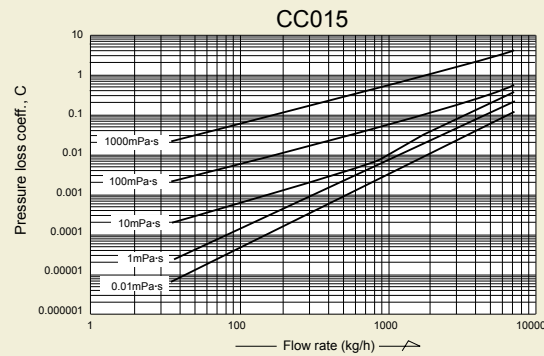
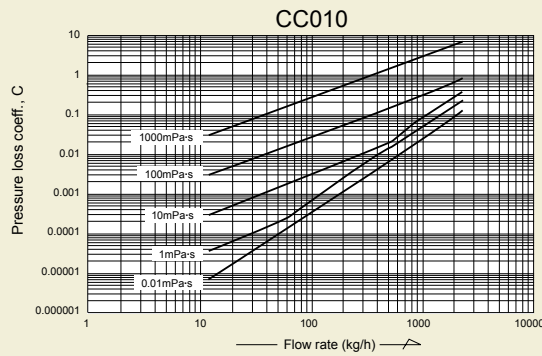
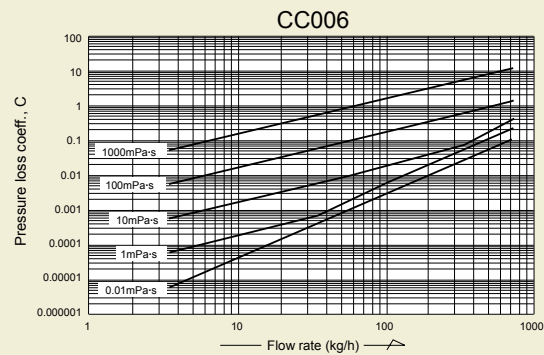
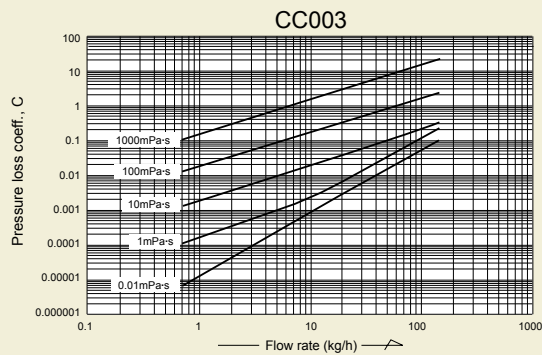
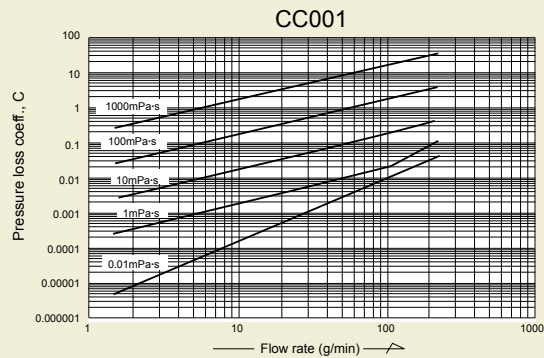
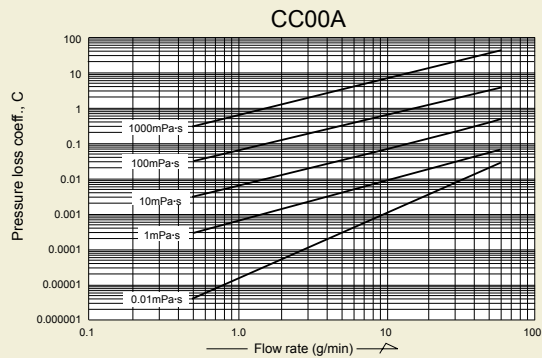
SEL

ENT

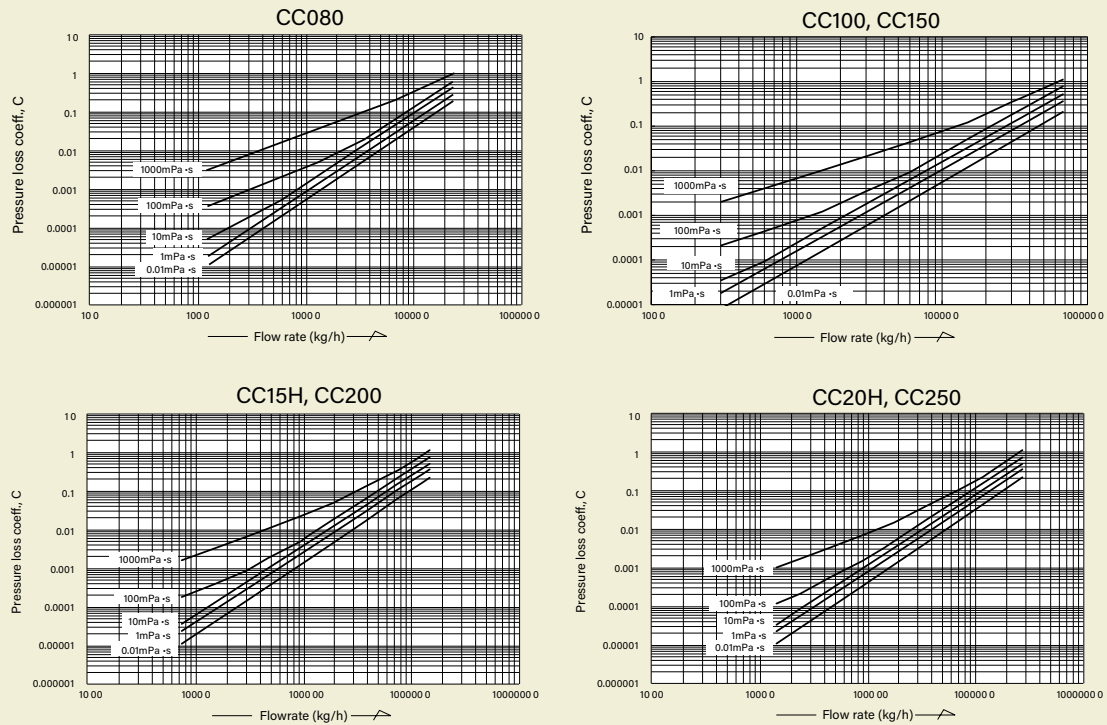
To select the mode, touch the infrared optical sensor panel through the front glass.

- 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 user-defined duration.

PERFORMANCE
Pressure Losses



Pressure Losses



How to Determine Pressure Loss*

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

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

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

$$\Delta P_2 = C \times \frac{\mu_2}{\mu_1} \times \frac{1}{d}$$

where

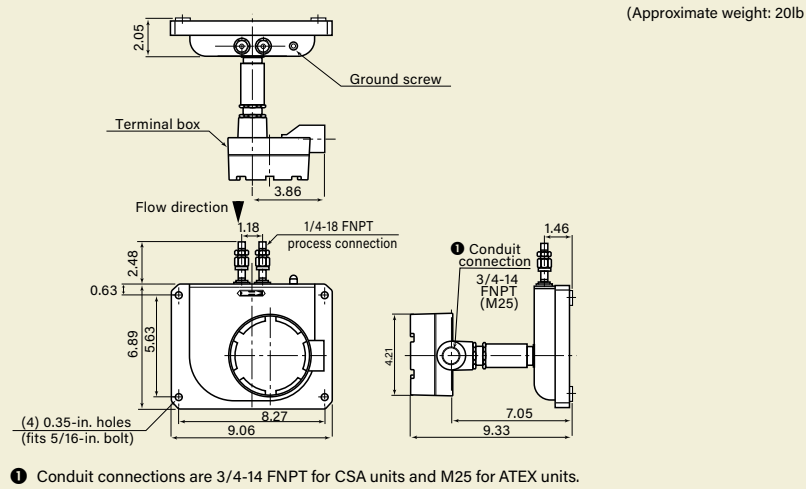
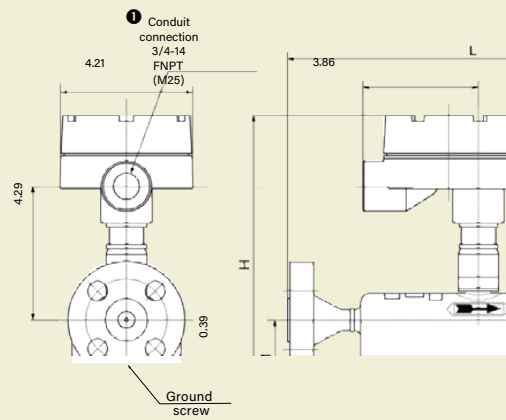
ΔP_2 = Pressure loss of high-viscosity liquid (MPa)

μ_1 = Maximum viscosity shown in the graph (mPa·s)

μ_2 = Viscosity of high-viscosity liquid (mPa·s)

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

C = Pressure loss factor

DIMENSIONS [UNITS IN INCHES]**Sensor unit: CC00A and CC001****Transmitter: Separately-mounted/threaded connection type****Sensor unit: CC003****Transmitter: Separately-mounted/flange connection type**

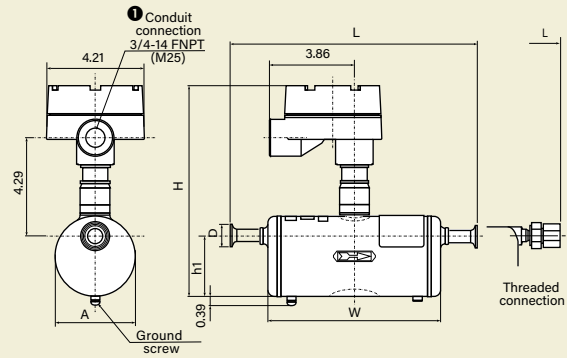
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (lb) |
|-------|--------------------|------|------|------|---------|-------------------|-----------|-----------|------|------|------|------|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC003 | ½ | 11.9 | 12.2 | 12.7 | 13.3 | 15 | 10.8 | 11.1 | 9.06 | 2.64 | 3.51 | 7.56 | 11 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

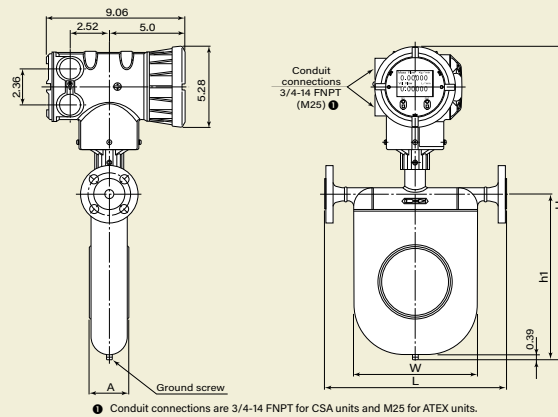
* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

Sensor unit: CC003**Transmitter: Separately-mounted/ferrule or threaded connection type**

| Model | Ferrule | | L | H | h1 | A | D | W | Approx. Weight (lb) | Model | Threaded Connection | L | Approx. Weight (lb) |
|-------|--------------|----------------|-------|------|------|------|------|------|---------------------|-------|---------------------|------|---------------------|
| | Nominal size | Connection (2) | | | | | | | | | | | |
| CC003 | 10 | Ferrule 10A | 10.49 | 9.06 | 2.64 | 3.51 | 7.56 | 1.34 | 9.92 | CC003 | ½-14 FNPT | 13.1 | 9.92 |

2. 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.

| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (lb) |
|-------|--------------------|------|------|------|---------|-------------------|-----------|-----------|------|------|------|------|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC006 | ½ | 10.6 | 10.9 | 11.4 | 12.1 | 15 | 9.49 | 9.72 | 16.7 | 7.09 | 2.09 | 5.83 | 15.4 |
| CC010 | ½ | 11.1 | 11.5 | 11.9 | 12.6 | 15 | 10.1 | 10.3 | 18.2 | 8.58 | 2.09 | 6.42 | 17.2 |
| CC015 | ½ | 12.8 | 13.1 | 13.7 | 14.3 | 15 | 11.8 | 12 | 20.2 | 10.6 | 2.56 | 8.07 | 19.4 |
| CC025 | 1 | 16.2 | 16.7 | 17.2 | 18.1 | 25 | 14.8 | 15 | 22.8 | 13 | 3.27 | 10.3 | 29.3 |
| CC040 | 1-½ | 21.5 | 22 | 22.6 | 23.7 | 40 | 20 | 20.2 | 28 | 17.8 | 4.76 | 15.2 | 50.7 |
| CC050 | 2 | 21.7 | 22.2 | 22.9 | 25.2 | 50 | 20.2 | 20.4 | | | | | 50.7 |
| CC080 | 3 | 27.5 | 28.2 | 29 | 30.6 | 80 | 25.9 | 26.6 | 34.6 | 23.7 | 6.85 | 20.1 | 125.7 |

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

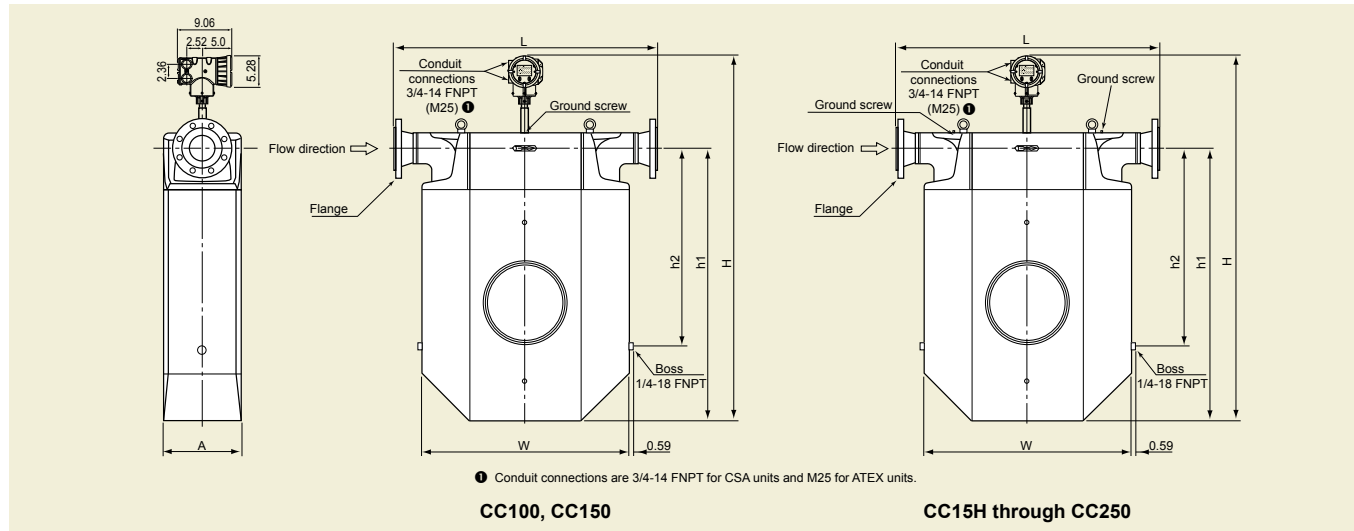
2. ASME 900 flanges are only available in Alloy C22 material.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

Sensor unit: CC100 through CC250

Transmitter: Integrally-mounted/flange connection type

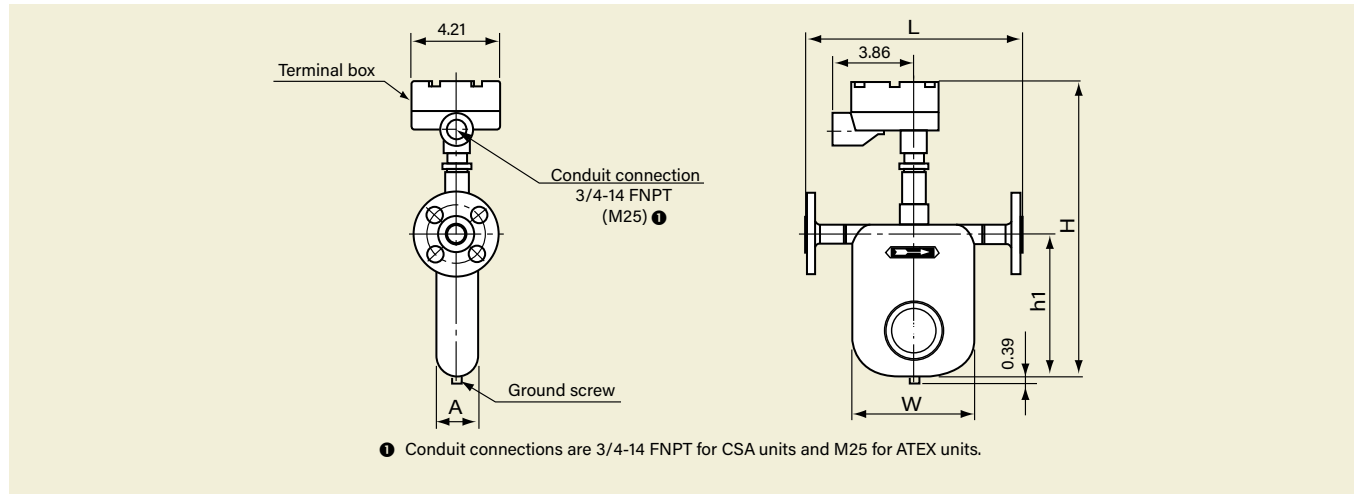


| Model | Flange | | L | H | h1 | A | D | W | Approx. Weight (lb) |
|-------|--------------|---------------|------|------|------|------|------|------|---------------------|
| | Nominal size | Flange rating | | | | | | | |
| CC100 | 4" | ASME 150 | 40.1 | 55.2 | 40 | 26 | 11.8 | 31.9 | 509 |
| | | ASME 300 | 40.8 | | | | | | |
| | | ASME 600 | 42.6 | | | | | | |
| | DN100 | PN 10, 16 | 38.1 | | | | | | |
| | | PN 25, 40 | 39.1 | | | | | | |
| CC150 | 6" | ASME 150 | 51.9 | 55.2 | 40 | 26 | 11.8 | 31.9 | 542 |
| | | ASME 300 | 52.7 | | | | | | |
| | | ASME 600 | 54.6 | | | | | | |
| | DN150 | PN 10, 16 | 49.2 | | | | | | |
| | | PN 25, 40 | 50.8 | | | | | | |
| CC15H | 6" | ASME 150 | 42.8 | 63.1 | 46.9 | 33.5 | 12.6 | 31.9 | 683 |
| | | ASME 300 | 43.6 | | | | | | |
| | | ASME 600 | 45.6 | | | | | | |
| | DN150 | PN 10, 16 | 40.1 | | | | | | |
| | | PN 25, 40 | 41.7 | | | | | | |
| CC200 | 8" | ASME 150 | 55.8 | 63.1 | 46.9 | 33.5 | 12.6 | 31.9 | 750 |
| | | ASME 300 | 56.6 | | | | | | |
| | | ASME 600 | 58.8 | | | | | | |
| | DN200 | PN 10, 16 | 52.7 | | | | | | |
| | | PN 25 | 54.1 | | | | | | |
| CC20H | 8" | PN 40 | 54.7 | 72 | 54.7 | 37.8 | 16.5 | 43.7 | 1345 |
| | | ASME 150 | 55.8 | | | | | | |
| | | ASME 300 | 56.6 | | | | | | |
| | DN200 | PN 10, 16 | 52.7 | | | | | | |
| | | PN 25 | 54.1 | | | | | | |
| CC20H | 10" | PN 40 | 54.7 | 72 | 54.7 | 37.5 | 16.5 | 43.7 | 1433 |
| | | ASME 150 | 69.8 | | | | | | |
| | | ASME 300 | 71.1 | | | | | | |
| | DN250 | PN 10 | 67.1 | | | | | | |
| | | PN 16 | 67.3 | | | | | | |
| | | PN 25 | 68.7 | | | | | | |
| | | PN 40 | 70 | | | | | | |

2. Process connection: A = mm

Sensor unit: CC006 through CC080

Transmitter: Separately-mounted/flange connection type



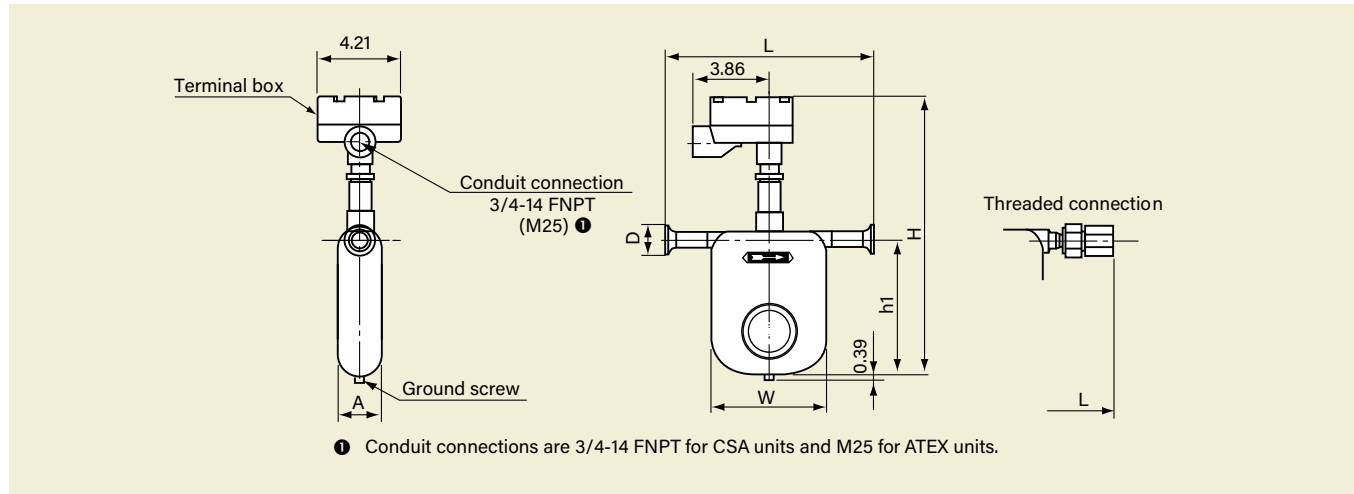
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (lb) |
|-------|--------------------|------|------|------|---------|-------------------|-----------|-----------|------|------|------|------|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC006 | ½ | 10.6 | 10.9 | 11.4 | 12.1 | 15 | 9.49 | 9.72 | 14.5 | 7.09 | 2.09 | 5.83 | 8.8 |
| CC010 | ½ | 11.1 | 11.5 | 11.9 | 12.6 | 15 | 10 | 10.3 | 16 | 8.58 | 2.09 | 6.42 | 10.4 |
| CC015 | ½ | 12.8 | 13.1 | 13.7 | 14.3 | 15 | 11.8 | 12 | 18 | 10.6 | 2.56 | 8.07 | 12.3 |
| CC025 | 1 | 16.2 | 16.7 | 17.2 | 18.1 | 25 | 14.8 | 15 | 21 | 13 | 3.27 | 10.3 | 23 |
| CC040 | 1-½ | 21.5 | 22 | 22.6 | 23.7 | 40 | 20 | 20.2 | 25.7 | 17.8 | 4.76 | 15.2 | 44.1 |
| CC050 | 2 | 21.7 | 22.2 | 22.9 | 25.2 | 50 | 20.2 | 20.4 | | | | | |
| CC080 | 3 | 27.5 | 28.2 | 29 | 30.6 | 80 | 26 | 26.6 | 32.4 | 23.7 | 6.85 | 20.1 | 119 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

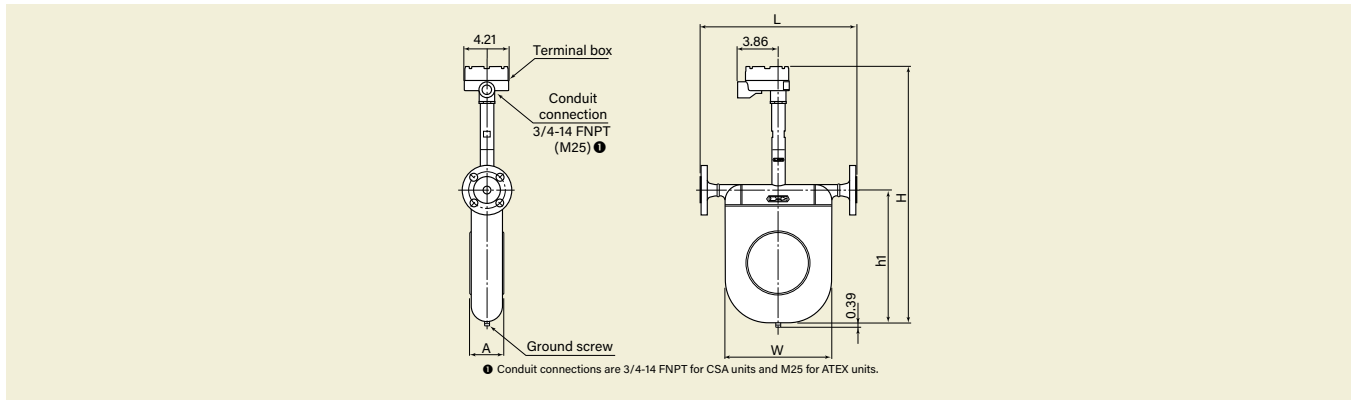
Sensor unit: CC006 through CC080**Transmitter separately-mounted/ferrule or threaded connection type**

| Model | Ferrule | | L | H | h1 | A | W | D | Approx. Weight (lb) |
|-------|--------------|----------------------------|------|------|------|------|------|------|---------------------|
| | Nominal size | Connection (2) | | | | | | | |
| 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 | 19.4 | 25.7 | 17.8 | 4.76 | 15.2 | 1.99 | 35.3 |
| CC050 | 50 | Ferrule 51 (ISO), IDF 2S | | | | | | 2.52 | |
| CC080 | 80 | Ferrule 76.1 (ISO), IDF 3S | 25.9 | 32.4 | 23.7 | 6.85 | 20.1 | 3.58 | 105.8 |

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

| Model | Threaded Connection | L | Approx. Weight (lb) |
|-------|---------------------|------|---------------------|
| CC006 | ½-14 FNPT | 11.7 | 6.2 |
| CC010 | ½-14 FNPT | 12.3 | 7.5 |
| CC015 | ¾-14 FNPT | 15 | 9.3 |

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



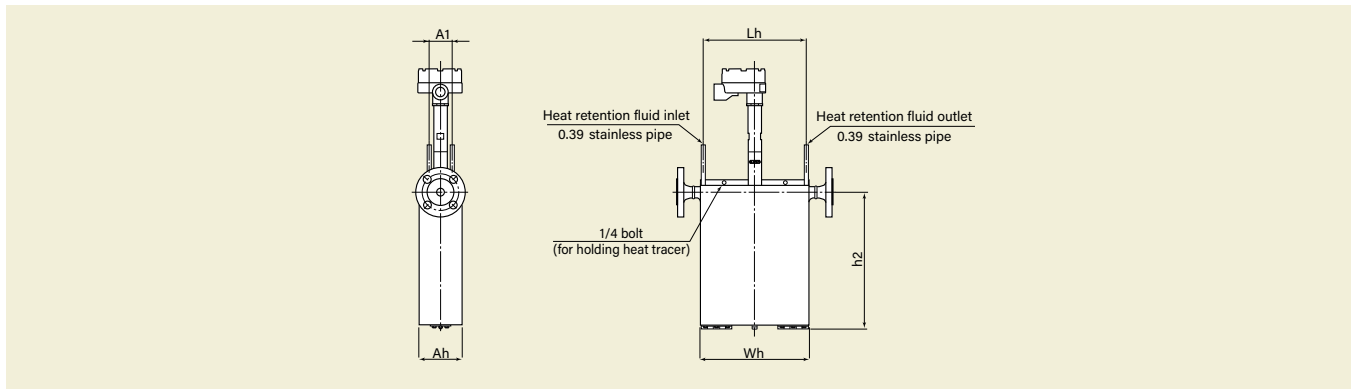
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (lb) |
|-------|--------------------|------|------|------|---------|-------------------|-----------|-----------|------|------|------|------|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC025 | 1 | 16.2 | 16.7 | 17.2 | — | 25 | 14.8 | 15 | 25.1 | 12.3 | 3.27 | 10.3 | 24 |
| CC040 | 1-½ | 21.5 | 22 | 22.6 | — | 40 | 20 | 20.2 | 30.2 | 17.8 | 4.76 | 15.2 | 44.8 |
| CC050 | 2 | 21.7 | 22.2 | 22.9 | — | 50 | 20.2 | 20.4 | | | | | 45.6 |
| CC080 | 3 | 27.5 | 28.2 | 29 | 30.6 | 80 | 25.9 | 26.6 | 37.8 | 23.7 | 6.85 | 20.1 | 119 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

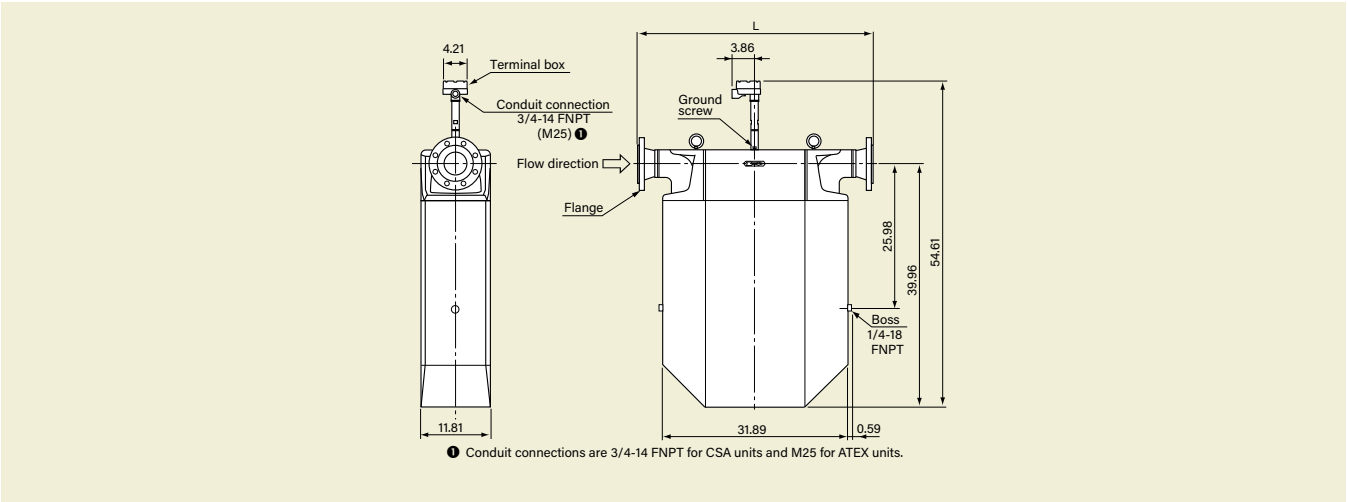
* DIN flanges are only available for meter material SUS316L.

Sensor unit: CC025 through CC080 (High-temperature models)
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 | 1-½ | HT1-040A | 14.8 | 18.3 | 5.67 | 2.76 | 15.4 | 70.1 |
| CC050 | 2 | | | | | | | 71 |
| CC080 | 3 | HT1-080A | 19.7 | 24.1 | 7.8 | 4.33 | 21.5 | 166 |

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

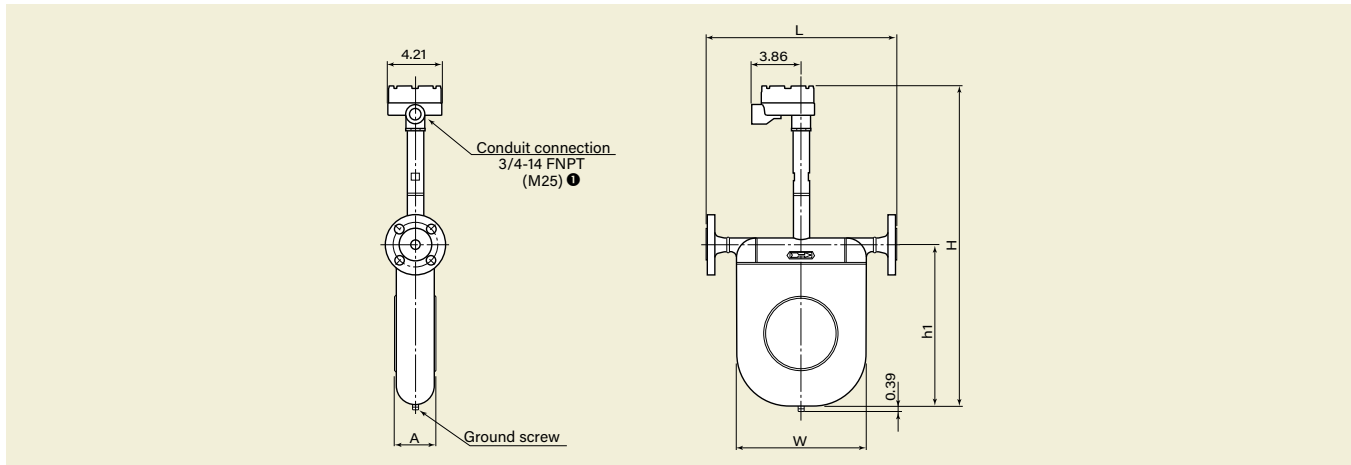


| Model | Flange | | L | Approx. Weight (lb) |
|-------|--------------|---------------|------|---------------------|
| | Nominal size | Flange rating | | |
| CC100 | 4" | ASME 150 | 40.1 | 522 |
| | | ASME 300 | 40.8 | 540 |
| | | ASME 600 | 42.6 | 562 |
| | DN100 | PN 10, 16 | 38.1 | 509 |
| | | PN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

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

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

Transmitter: Separately-mounted/flange connection type



| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (lb) |
|-------|--------------------|------|------|------|---------|-------------------|-----------|-----------|------|------|------|------|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC025 | 1 | 16.2 | 9.53 | 17.2 | 18.1 | 25 | 14.8 | 15 | 26 | 13 | 3.27 | 10.3 | 24 |
| CC040 | 1-1/2 | 21.5 | 22 | 22.6 | 23.7 | 40 | 20 | 20.2 | 31.1 | 17.8 | 4.76 | 15.2 | 44.8 |
| CC050 | 2 | 21.7 | 22.2 | 22.9 | 25.2 | 50 | 20.2 | 20.4 | | | | | 46.3 |
| CC080 | 3 | 27.5 | 28.2 | 29 | 30.6 | 80 | 25.9 | 26.6 | 37.8 | 23.7 | 6.85 | 20.1 | 119 |

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

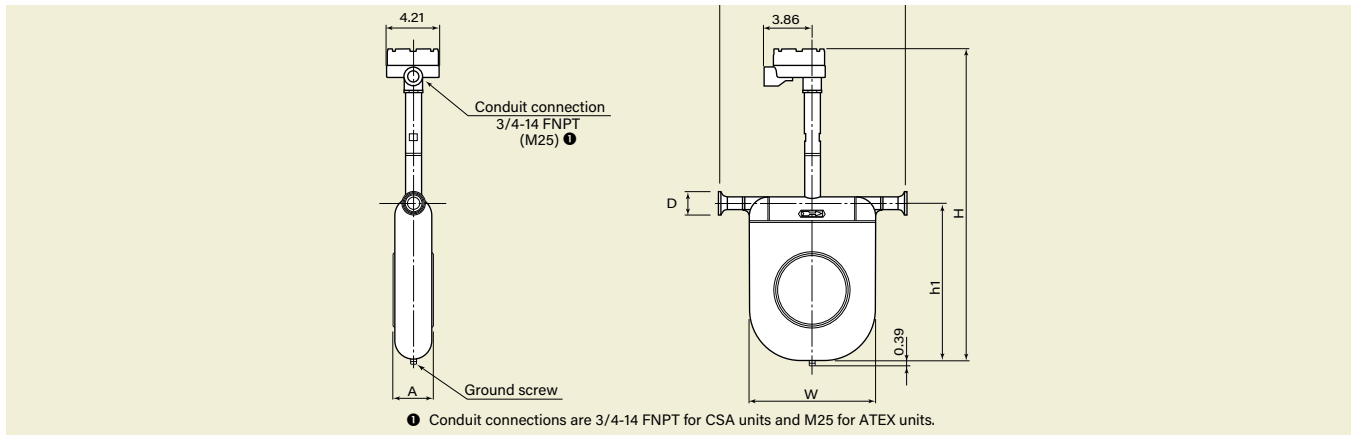
2. Alloy C22 and ASME 900 is only available with the high-temperature CC080 model.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

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

Transmitter: Separately-mounted/ferrule connection type

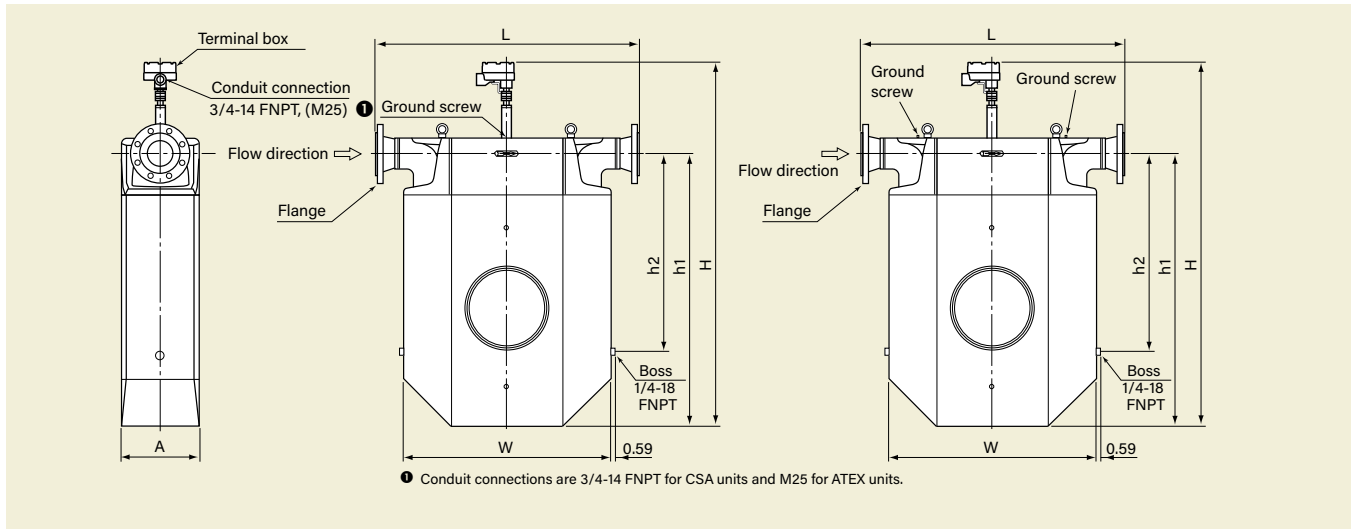


| Model | Nominal size (in.) | Heat Tracer Model Compatibility | L | H | h1 | A | W | D | Approx. Weight (lb) |
|-------|--------------------|---------------------------------|------|------|------|------|------|------|---------------------|
| CC025 | 25 | Ferrule 25 (ISO), IDF 1S | 14.6 | 26 | 13 | 3.27 | 10.3 | 1.99 | 18.3 |
| CC040 | 40 | Ferrule 38 (ISO), IDF 1.5S | 19.4 | 31.1 | 17.8 | 4.76 | 15.2 | 1.99 | 37.5 |
| CC050 | 50 | Ferrule 51 (ISO), IDF 2S | | | | | | 2.52 | |
| CC080 | 80 | Ferrule 76.1 (ISO), IDF 3S | 25.9 | 37.8 | 23.7 | 6.85 | 20.1 | 3.58 | 105.8 |

2. Process connection: S = in.

Sensor unit: CC100 through CC250 (Low-temperature models)

Transmitter: Separately-mounted/flange connection type

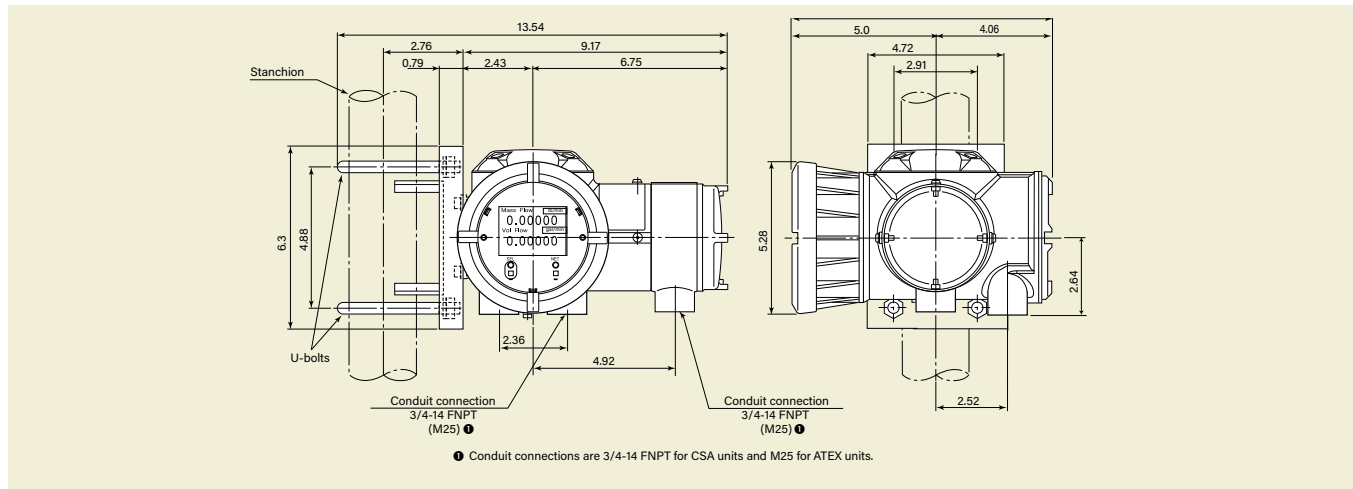


| Model | Flange | | L | H | h1 | A | D | W | Approx. Weight (lb) |
|-------|--------------|---------------|------|------|------|------|------|------|---------------------|
| | Nominal size | Flange rating | | | | | | | |
| CC100 | 4" | ASME 150 | 40.1 | 54.6 | 40 | 26 | 11.8 | 31.9 | 509 |
| | | ASME 300 | 40.8 | | | | | | |
| | | ASME 600 | 42.6 | | | | | | |
| | DN100 | PN 10, 16 | 38.1 | | | | | | |
| | | PN 25, 40 | 39.1 | | | | | | |
| CC150 | 6" | ASME 150 | 51.2 | 54.6 | 40 | 26 | 11.8 | 31.9 | 542 |
| | | ASME 300 | 52.7 | | | | | | |
| | | ASME 600 | 54.6 | | | | | | |
| | DN150 | PN 10, 16 | 49.2 | | | | | | |
| | | PN 25, 40 | 50.8 | | | | | | |
| CC15H | 6" | ASME 150 | 42.8 | 62.5 | 46.9 | 33.5 | 12.6 | 31.9 | 683 |
| | | ASME 300 | 43.6 | | | | | | |
| | | ASME 600 | 45.6 | | | | | | |
| | DN150 | PN 10, 16 | 40.1 | | | | | | |
| | | PN 25, 40 | 41.7 | | | | | | |
| CC200 | 8" | ASME 150 | 55.8 | 62.5 | 46.9 | 33.5 | 12.6 | 31.9 | 750 |
| | | ASME 300 | 56.6 | | | | | | |
| | | ASME 600 | 58.8 | | | | | | |
| | DN200 | PN 10, 16 | 52.7 | | | | | | |
| | | PN 25 | 54.1 | | | | | | |
| CC20H | 8" | PN 40 | 54.7 | 71.4 | 54.7 | 37.8 | 16.5 | 43.7 | 1345 |
| | | ASME 150 | 55.8 | | | | | | |
| | | ASME 300 | 56.6 | | | | | | |
| | DN200 | PN 10, 16 | 52.7 | | | | | | |
| | | PN 25 | 54.1 | | | | | | |
| | | PN 40 | 54.7 | | | | | | |
| CC20H | 10" | ASME 150 | 69.8 | 71.4 | 54.7 | 37.8 | 16.5 | 43.7 | 1433 |
| | | ASME 300 | 71.1 | | | | | | |
| | | PN 10 | 67.1 | | | | | | |
| | DN250 | PN 16 | 67.3 | | | | | | |
| | | PN 25 | 68.7 | | | | | | |
| | | PN 40 | 70 | | | | | | |

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

DIMENSIONS [UNITS IN INCHES]

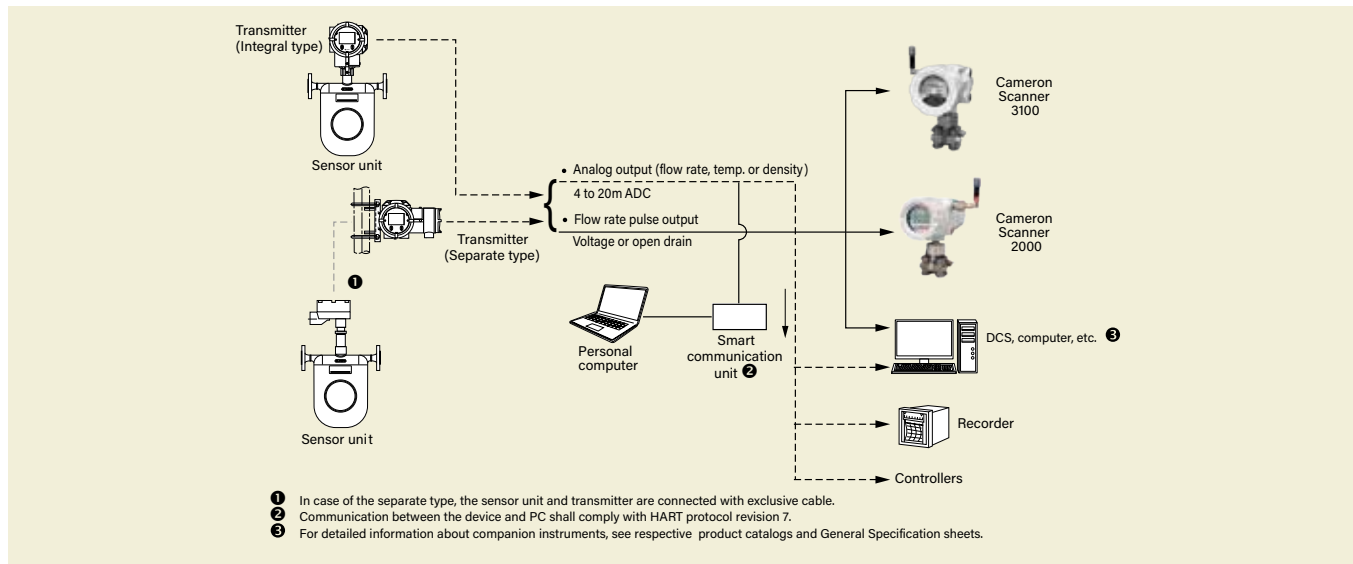
Separately-mounted Transmitter



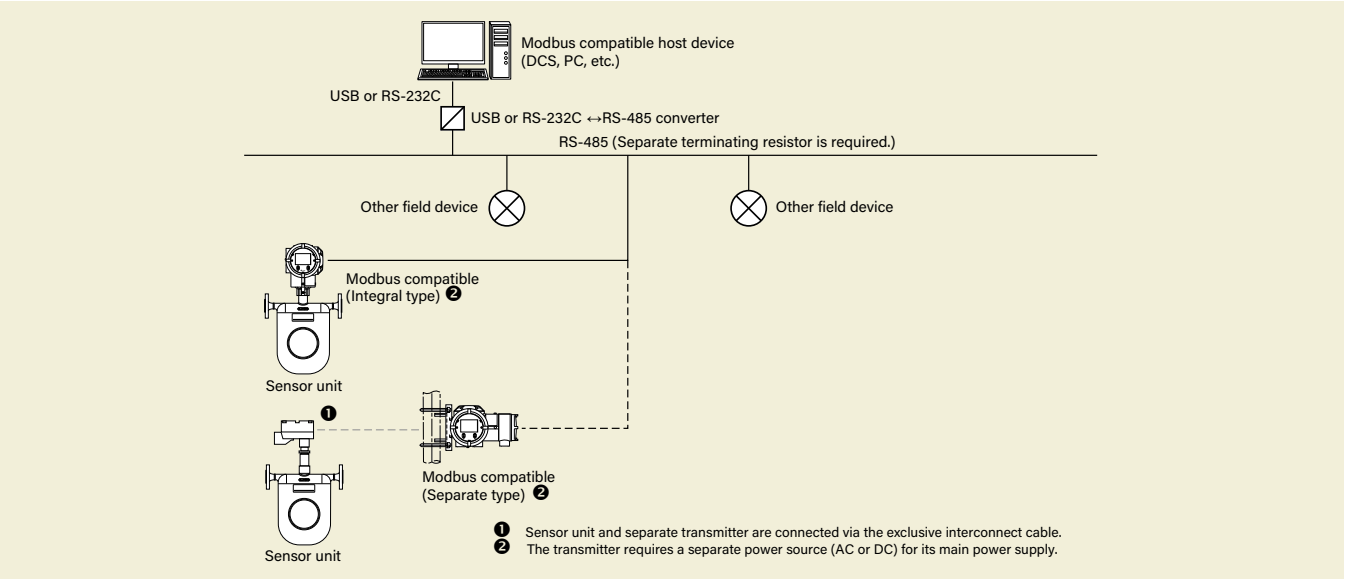
Pipe mounting hardware (U-bolts) are furnished as standard accessories. The pipe must be provided by the customer.

REMOTE MEASURING SYSTEM

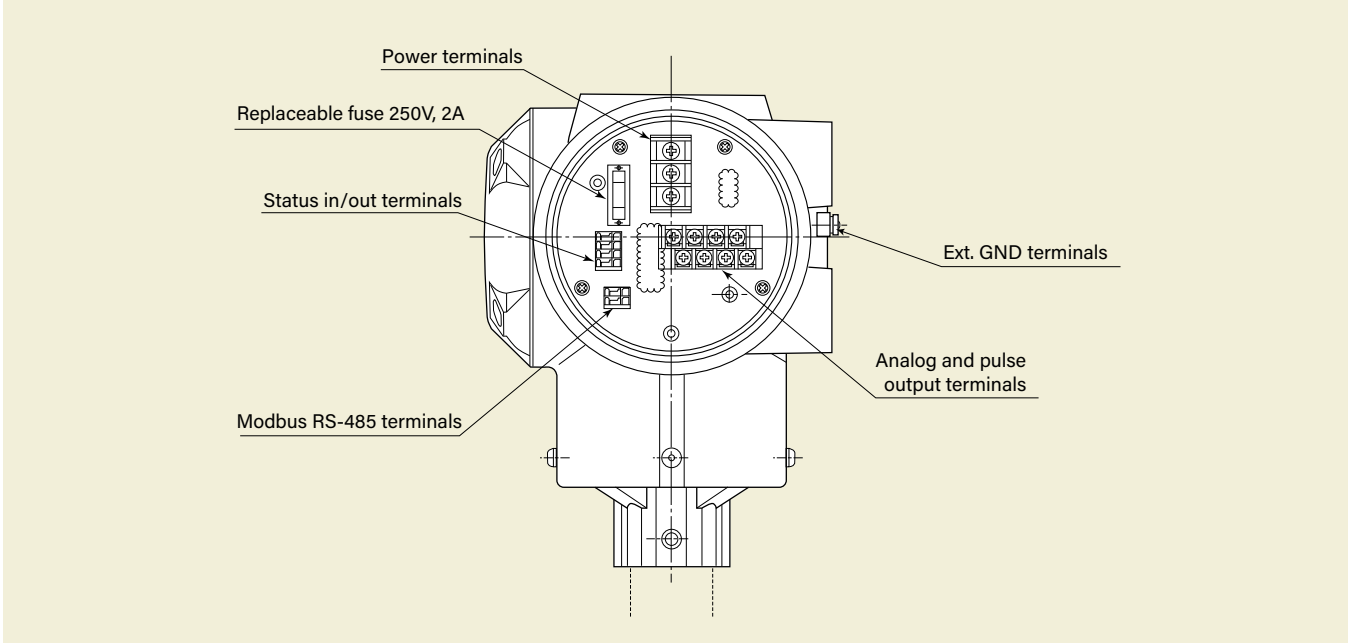
HART Protocol



Modbus Protocol



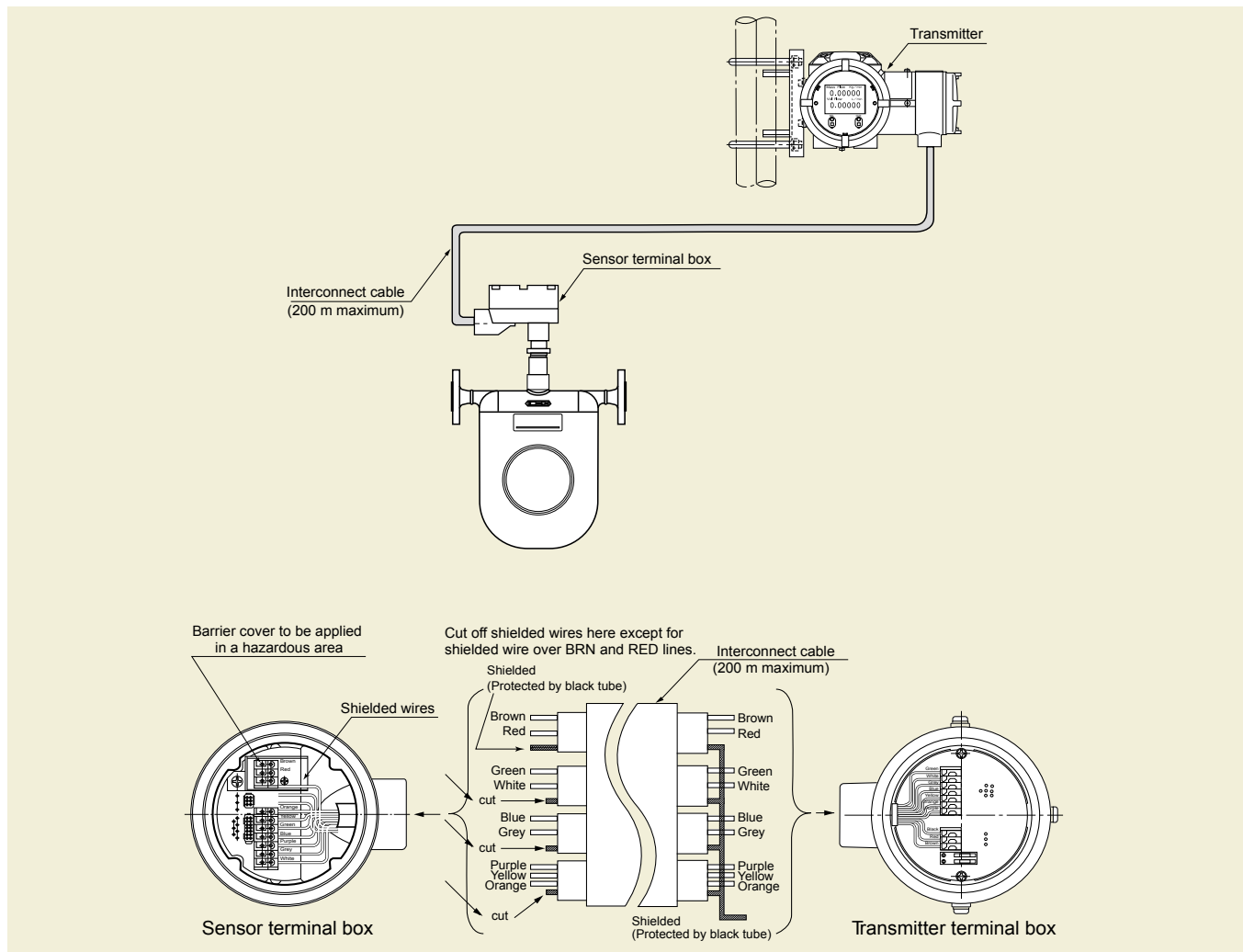
Transmitter Power and Input/Output Signal Wiring



| Item | Label | Description | Remarks |
|--------|---------|--|---|
| Signal | 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 (-) | | |
| | P1 (+) | Pulse Output 1 (voltage/open drain) | Maximum pulse output (voltage/open drain) transmission length: + 10 m @ 10 kHz + 100 m @ 1 kHz |
| | P1 (-) | | |
| | P2 (+) | Pulse Output 2 (voltage/open drain) | + 1 m @ 100 Hz Minimum conductor size: 18 AWG |
| | P2 (-) | | |
| | SI (+) | Status Input (contact) | — |
| | SI (-) | | |
| | SO (+) | Status Output (open drain) | |
| | SO (-) | | |
| Power | I/O (+) | Expanded Input/Output (Modbus communication, etc.) | For Modbus communications: + Maximum transmission length: 1200m + Minimum conductor size: 18 AWG" |
| | I/O (-) | | |
| | L (+) | Power (with DC power: +) | — |
| | GND | Earth Ground | |
| | N (-) | Power (with DC power: -) | |

WIRING DIAGRAMS

Wiring Between Sensor Unit and Separately-mounted Transmitter



Use dedicated interconnect cable and prepare shielded wire as follows.

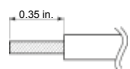
Transmitter end

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

Sensor end

- + 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.
- + 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

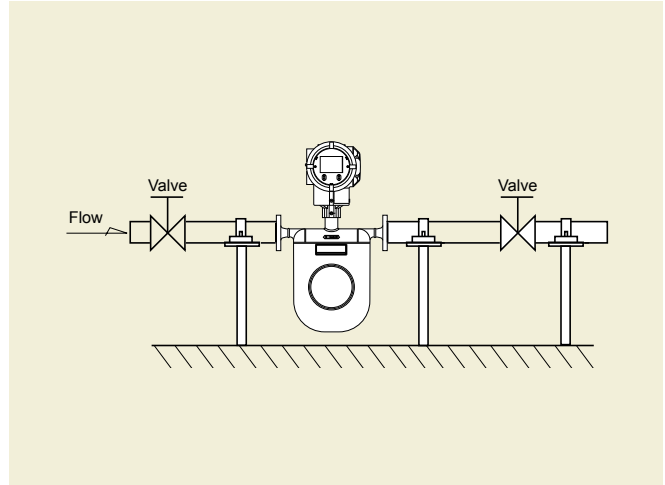
Typical Installation

1. Avoid pipeline stresses on the meter.
2. The meter should be supported near each process connection, as shown in the illustration on the right.
3. Avoid supporting the meter body directly.
4. 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.
5. 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

1. 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 $\pm 55^{\circ}\text{F}/\text{min.}$ for both heating and cooling.



Prevention of Cavitation (Gas Flash Off)

Cavitation can cause a loss in Coriolis meter measurement accuracy. To prevent cavitation, maintain line pressure upstream and downstream of the meter.

Avoid piping arrangements that open the line to the atmosphere immediately downstream of the meter. Particular care must be taken in low pressure applications and with high vapor pressure liquids, such as NGLs (natural gas liquids). It is recommended the back pressure immediately downstream of the meter be kept above the value calculated by the formula below:

$$P_d = 2\Delta P + 1.25P_v$$

where P_d : Downstream pressure (psia)

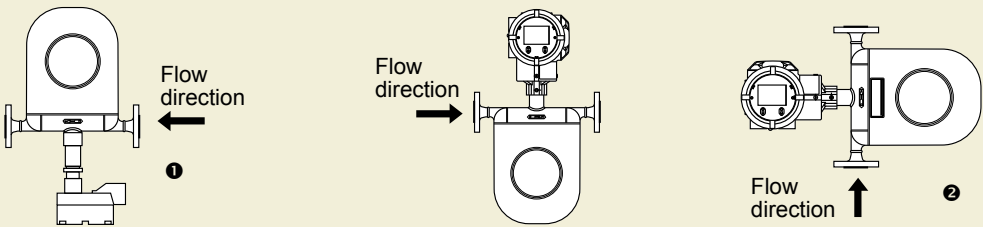
ΔP : Pressure drop across meter (psid)

P_v : Vapor pressure of the process fluid (psia)

Calculation based on API Manual of Petroleum Measurement Standards, Chapter 5.6, Section 6.3.2.

Physical Orientation
CC003 through CC250

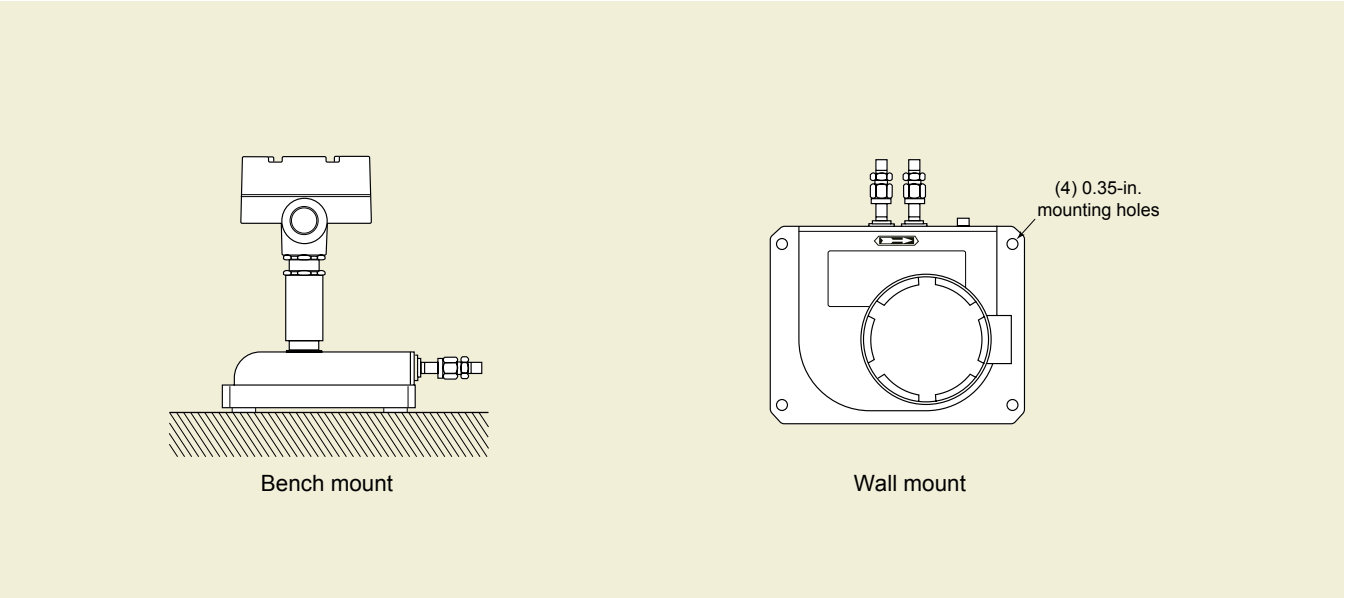
Recommended physical orientation varies with the type of process fluid.
(No. 2 in the figure below shows basic orientation for liquid service.)
Physical orientation must be specified at the time of order.

| Horizontal run | | Vertical run |
|--|------|---------------------------------|
| No.1 | No.2 | No.3 |
| Orientation | | |
|  | | |
| Fluids | | |
| + Gases | | + Slurries (requiring cleaning) |
| + Slurries | | + Liquids |
| | | + Gases |

1. 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
- + Sensor ratings: Class I, Zone 1, Ex ib IIB T4 Gb
Class I, Zone 1, AEx ib IIB T4 Gb
- + Transmitter and sensor ambient temperature: -40°F to 131°F
- + Sensor to be connected: CC006 through CC250
- + Fluid temperature: -40°F to 176°F
- + 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 T6 Gb
- + 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
- + Transmitter ambient temperature: -40°F to 131°F
- + Communication: HART, Modbus

Meter Combinations

| Meter Temperature Category | | | Transmitter | | | Hazardous Location Temperature Class | | | |
|----------------------------|--------------|-------------|-------------------------|---------------|---------------|--------------------------------------|-------------|-----------------|-------------------|
| Model | Model Code 7 | Description | Nominal Media Temp (°F) | Model Code 12 | Mounting Type | Model Code 18 | Description | Media Temp (°F) | Ambient Temp (°F) |
| CC00A and CC001 | 2 | Standard B | 266° to 392° | 2 | Separate | 3 | Class T3 | -40° to 302° | -40° to 140° |
| CC003 | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| CC006 through CC015 | 1 | Standard A | -40° to 266° | 1 | Integral | 4 | Class T4 | -40° to 176° | -40° to 140° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| CC025 through CC080 | 1 | Standard A | -40° to 266° | 1 | Integral | 4 | Class T4 | -40° to 176° | -40° to 140° |
| | 1 | Standard A | -40° to 266° | 2 | Separate | 3 | Class T3 | -40° to 302° | -40° to 140° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 3 | High Temp | 392° to 662° | 2 | Separate | 1 | Class T1 | -4° to 662° | -4° to 122° |
| CC100 through CC150 | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 3 | High Temp | 392° to 662° | 2 | Separate | 1 | Class T1 | -4° to 662° | -4° to 122° |
| CC15H through CC250 | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |

Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections.

Temperature Class describes "T" codes, which define temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections. If a meter will be used in a process with temperature lower than -22°F, Charpy impact testing is required.

EXPLOSION-PROOF SPECIFICATIONS**ATEX/IECEX****Integral Type**

- + Transmitter ratings: Zones 1 and 2
II 2G Ex d ib IIC T4 Gb
- + Sensor ratings: Zones 1 and 2
II 2G Ex ib IIC T4 Gb
- + Transmitter and sensor ambient temperature: -40°F to 131°F
- + Sensor to be connected: CC006 through CC250
- + Fluid temperature: -40°F to 176°F
- + Communication: HART, Modbus

Separate Type

- + Transmitter rating: II 2G Ex d [ib] II C T6 Gb
- + Sensor ratings: II 2G Ex ib II C T1, T2, T3, T4, T5
- + Transmitter ambient temperature: -40°F to 131°F
- + Communication: HART, Modbus

Meter Combinations

| Meter Temperature Category | | | Transmitter | | | Hazardous Location Temperature Class | | | |
|----------------------------|--------------|-------------|-------------------------|---------------|---------------|--------------------------------------|-------------|-----------------|-------------------|
| Model | Model Code 7 | Description | Nominal Media Temp (°F) | Model Code 12 | Mounting Type | Model Code 18 | Description | Media Temp (°F) | Ambient Temp (°F) |
| CC00A and CC001 | 2 | Standard B | 266° to 392° | 2 | Separate | 3 | Class T3 | -40° to 302° | -40° to 140° |
| CC003 | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| CC006 through CC015 | 1 | Standard A | -40° to 266° | 1 | Integral | 4 | Class T4 | -40° to 176° | -40° to 140° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| CC025 through CC080 | 1 | Standard A | -40° to 266° | 1 | Integral | 4 | Class T4 | -40° to 176° | -40° to 140° |
| | 1 | Standard A | -40° to 266° | 2 | Separate | 3 | Class T3 | -40° to 302° | -40° to 140° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 3 | High Temp | 392° to 662° | 2 | Separate | 1 | Class T1 | -4° to 662° | -4° to 122° |
| CC100 through CC150 | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 3 | High Temp | 392° to 662° | 2 | Separate | 1 | Class T1 | -4° to 662° | -4° to 122° |
| CC15H through CC250 | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |
| | 2 | Standard B | 266° to 392° | 2 | Separate | 2 | Class T2 | -40° to 392° | -40° to 140° |
| | 4 | Low Temp | -328° to 122° | 2 | Separate | 5 | Class T5 | -328° to 122° | -4° to 122° |

Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections.

Temperature Class describes "T" codes, which define temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections. 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

| Meter type | Model | Size (in.) | Guaranteed minimum rate (lb/min) | Minimum setting rate (lb/min) | Maximum service rate (lb/min) | Maximum allowable rate (lb/min) | Uncertainty (5) | | Repeatability (5) | | Zero stability (lb/min) | Analog output uncertainty |
|------------------------------|-------|------------|----------------------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------------------|------------------------|-----------------------------|---------------------------|-------------------------|---------------------------|
| | | | | | | | Liquids | Gases | Liquids | Gases | | |
| Low-flow | CC00A | ¼ | 0.024 | 0.12 | 2.4 | 3.6 | ±0.2% of reading (±ZS) (5) | ±0.5% of reading (±ZS) | ±0.05% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.00036 | ±0.1% of full scale |
| | CC001 | | 0.09 | 0.45 | 9 | 13.5 | | | | | 0.00135 | |
| | CC003 | 1/2 | 0.72 (0.9) (1) | 3.6 | 72 | 144 (180) (1) | | | | | 0.0018 | |
| | CC006 | 1/2 | 3.6 | 18 | 360 | 720 | ±0.1% of reading (2) | | ±0.5% of reading (3) | | 0.018 | |
| | CC010 | 1/2 | 12 | 60 | 1200 | 2400 | | | | | 0.06 | |
| | CC015 | 1/2 | 36 | 180 | 3600 | 7200 | | | | | 0.18 | |
| Standard and Low-temperature | CC025 | 1 | 108 | 540 | 10800 | 21600 | ±0.1% of reading (±ZS) (4) | – | ±0.05% of reading (±½ ZS) | – | 0.54 | |
| | CC040 | 1-½ | 390 | 1950 | 39000 | 78000 | | | | | 1.95 | |
| | CC050 | 2 | | | | | | | | | | |
| | CC080 | 3 | 1200 | 6000 | 120000 | 240000 | | | | | 6 | |
| | CC100 | 4 | 3420 | 17100 | 342000 | 684000 | | | | | 17.1 | |
| | CC150 | 6 | | | | | | | | | | |
| | CC15H | 6 | 7000 | 35000 | 700000 | 140000 | | | | | 35 | |
| | CC200 | 8 | | | | | | | | | | |
| | CC20H | 8 | 14000 | 70000 | 140000 | 28000 | | | | | 70 | |
| | CC250 | 10 | | | | | | | | | | |
| High-pressure | CC010 | ¾ | 24 | 120 | 840 | 1680 | ±0.2% of reading (±ZS) (5) | ±0.5% of reading (±ZS) | ±0.1% of reading (±½ ZS) | ±0.25% of reading (±½ ZS) | 0.21 | |
| | CC015 | ¾ | 78 | 390 | 2550 | 5100 | | | | | 0.636 | |
| High-temperature | CC025 | 1 | 108 | 540 | 10800 | 21600 | ±0.1% of reading (±ZS) | – | ±0.5% of reading (±½ ZS) | – | 1.08 | |
| | CC040 | 1-½ | 390 | 1950 | 39000 | 78000 | | | | | 3.9 | |
| | CC050 | 2 | | | | | | | | | | |
| | CC080 | 3 | 1200 | 6000 | 120000 | 240000 | | | | | 12 | |
| | CC100 | 4 | 3420 | 17100 | 342000 | 684000 | | | | | 34.2 | |
| | CC150 | 6 | | | | | | | | | | |

1. 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).

3. ±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 uncertainty of ±0.1% of reading is required, consult Cameron.

5. Above maximum service flow rate, the uncertainty is ±0.3% of reading (±ZS).

* 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 = $\frac{\text{Zero stability}}{\text{Current flow rate}} \times 100$

Volumetric Flow Rate (1)

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

* High-pressure models

1. Calculations based on water (specific gravity of 1) at 15°C (mass = 999.13kg/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 (in.) | Metering range | Uncertainty | Analog output uncertainty |
|------------------------------|-------|------------|----------------|--------------|---------------------------|
| Low-flow | CC00A | ¼ | 0.3 to 2g/mL | ±0.003 g/mL | ±0.1% of full scale |
| | CC001 | | | | |
| | CC003 | ½ | | ±0.0005 g/mL | |
| | CC006 | ½ | | | |
| | CC010 | ½ | | | |
| | CC015 | ½ | | | |
| Standard and Low-temperature | CC025 | 1 | 0.3 to 2 g/mL | ±0.004 g/mL | ±0.1% of full scale |
| | CC040 | 1-½ | | | |
| | CC050 | 2 | | | |
| | CC080 | 3 | | | |
| | CC100 | 4 | | | |
| | CC150 | 6 | | | |
| | CC15H | 6 | | | |
| | CC200 | 8 | | | |
| | CC20H | 8 | | | |
| High-pressure | CC250 | 10 | | | |
| | CC010 | ¾ | 0.3 to 2 g/mL | ±0.003g/mL | ±0.1% of full scale |
| CC015 | 3/4 | | | | |
| High-temperature | CC025 | 1 | 0.3 to 2g/mL | ±0.003g/mL | |
| | CC040 | 1-½ | | | |
| | CC050 | 2 | | | |
| | CC080 | 3 | | | |
| | CC100 | 4 | | | |
| | CC150 | 6 | | | |

GENERAL PERFORMANCE**Sensor Unit General Specifications – Low-Flow Models (CC00A, CC001 and CC003)**

| Item | | Description | | |
|--------------------------------------|-------------------------|---|-------|-------|
| Model | | CC00A | CC001 | CC003 |
| Nominal size | | ¼" | | |
| Materials | Wetted parts (1) | SUS316L | | |
| | Housing | SUS304 | | |
| | O-rings | Fluoro-elastomer (standard Viton®), PTFE (option) – | | |
| Process connection | | ¼-18 FNPT | | |
| | | ASME 100, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 (3) RF, IDF Ferrule (4) , Threaded | | |
| Applicable fluid | | Liquid and gas | | |
| Density range | | 0 to 2.0 g/mL | | |
| Temperature range | | –200°C to 200°C (5) | | |
| Tube withstand @ 37.8°C | | — | | |
| Maximum operating pressure @ 37.8°C | Liquid | 15 MPa | | |
| | Gas | 15 MPa | | |
| Sensor housing withstand (6) | | — | | |
| Flow direction | | Bi-directional | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | | |
| Dust-tight, waterproof configuration | | IP66/67 | | |

- When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.
- ASME 900 flanges are only available in Alloy C22 material.
- 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.
- 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, ½", DN15" | 15 mm, ½", DN15 | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 |
| Materials | Wetted parts (1) | SUS316L, Alloy C22 | | | | | | |
| | Housing | SUS304 | | | | | | |
| Process connection | | ASME 150, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 RF (3) ; IDF Ferrule (4) ; Threaded | | | | | | |
| Applicable fluids | | Liquid and gas | | | | | | |
| Density range | | 0 to 2.0 g/mL | | | | | | |
| Temperature range | | –200°C to 200°C (5) | | | | | | |
| Tube withstand @ 100°F | | 10.5 MPa | | | | | | |
| Maximum operating pressure | | Depends on flange rating | | | | | | |
| Sensor housing withstand (6) | | 3.8 MPa | 3.0 MPa | 2.2 MPa | 1.6 MPa | 1.8 MPa | | 1.4 MPa |
| Flow direction | | Bi-directional | | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | | |

- When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.
- ASME 900 flanges are only available in Alloy C22 material.
- 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.
- 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.

* Available with either integrally-mounted or separately-mounted transmitter.

* For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

GENERAL PERFORMANCE**Sensor Unit General Specifications – High-Flow Models (CC100 through CC250)**

| Item | | Description | | | | | |
|--------------------------------------|-------------------------|--|-------------------|----------|-------------------|---------|--------------------|
| Model | | CC100 | CC150 | CC15H | CC200 | CC20H | CC250 |
| Nominal size | | 100 mm, 4", DN100 | 150 mm, 6", DN150 | | 200 mm, 8", DN200 | | 250 mm, 10", DN250 |
| Materials | Wetted parts (1) | SUS316L | | | | | |
| | Housing | SUS304 | | | | | |
| Process connection | | ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF (2) | | | | | |
| Applicable fluids | | Liquid | | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | |
| Temperature range | | Maximum 10000 CP | | | | | |
| Tube withstand @ 100°F | | -200°C to 200°C (3) | | | | | |
| Maximum operating pressure | | 13.3 MPa | | 10.7 MPa | | 9.0 MPa | |
| Flow direction | | Bi-directional | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | |

- When SUS316L is selected for the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.
- Models CC20H and CC250 available only up to ASME Class 300 flanges.
- Refer to [Explosion-proof Specifications, page A-22](#) for details. When flowing non-combustible product, the maximum media temperature is 130°C. However, the maximum ambient temperature is 45°C. Higher temperature limits can be achieved with the high-temperature models.

High-Pressure Models (CC010 and CC015)

| Item | Description | |
|--|--|-----------------------------------|
| Model | CC010 | CC015 |
| Materials | Wetted parts | Flow Tube and Manifold: Alloy C22 |
| | Housing | SUS304 |
| Process connection | 3/8-18 FNPT | 3/4-14 FNPT |
| Applicable fluids | Liquid and gas | |
| Density range | 0.3 to 2.0 g/mL | |
| Temperature range | Integrally-mounted: -4°F to 194°F; Separately-mounted: -200°C to 200°C | |
| Maximum operating pressure (at room temperature) | 36 MPa | 43 MPa |
| Sensor housing withstand (1) | 3.0 MPa | 2.2 MPa |
| Flow direction | Bi-directional | |
| Explosion-proof configuration | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | |
| Dust-tight, waterproof 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 real For products conforming to the high-pressure gas safety regulations and CE marking, consult Cameron.

* For products conforming to the high-pressure gas safety regulations, consult Cameron.

GENERAL PERFORMANCE**High-Flow Models (CC025 through CC150)**

| Item | | Description | | | | | |
|--------------------------------------|-------------------------|---|-------------------|-----------------|--------------------|-------------------|-------------------|
| Model | | CC025 | CC040 | CC050 | CC080 | CC100 | CC150 |
| Nominal size | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 | 100 mm, 4", DN100 | 150 mm, 6", DN150 |
| Materials | Wetted parts (1) | SUS316L | | | SUS316L, Alloy C22 | SUS316L | |
| | Housing | SUS304 | | | | | |
| Process connection | | 1" to 3": ASME 150, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 RF 4" and 6": ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF | | | | | |
| Applicable fluids | | Liquid | | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | |
| Temperature range (3) | | –40°C to 350°C | | | | | |
| Tube withstand @ 37.8°C | | 10.5 MPa | | | | 13.3 MPa | |
| Maximum operating pressure | | Dependent on flange rating | | | | | |
| Sensor housing withstand (4) | | 1.6 MPa | 1.8 MPa | | 1.4 MPa | — | |
| Flow direction | | Bi-directional | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | |

Optional Heat Tracer Specifications (Available for Models CC025 through CC080) (5)

| | |
|--|--|
| 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 10 mm tubing |

1. When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.

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

3. 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.

4. ASME 900 flanges are only available in Alloy C22 material.

5. 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).

GENERAL PERFORMANCE

Low-Temperature Models (CC025 through CC250)

| Item | | Description | | | | | | | | | |
|--------------------------------------|-------------------------|--|-------------------------|--------------------|--------------------|---|----------------------|----------|--|---------|--------------------------|
| Model | | CC025 | CC040 | CC050 | CC080 | CC100 | CC150 | CC15H | CC200 | CC20H | CC250 |
| Nominal size | | 25 mm, 1", DN25 | 40 mm, 1-½", DN40 | 50 mm, 2", DN50 | 80 mm, 3", DN80 | 100 mm, 4", DN100 | 150 mm, 6", DN150 | | 200 mm, 8", DN200 | | 250 mm, 10", DN250 |
| Materials | Wetted parts (1) | SUS316L, Alloy C22 | | | | | SUS316L | | | | |
| | Housing | SUS304 | | | | | | | | | |
| Process connection | | ASME 150, 300, 600, 900 (2) RF; DIN PN 10, 16, 25, 40 RF (3) ; IDF Ferrule (4) | | | | ASME 150, 300, 600 RF; DIN PN 10, 16, 25, 40 RF (3) | | | ASME 150, 300 RF; DIN PN 10, 16, 25, 40 RF (3) | | |
| Applicable fluids | | Liquid and gas | | | | | Liquid | | | | |
| Density range | | 0.3 to 2.0 g/mL | | | | | | | | | |
| Temperature range | | -200°C to 122°C | | | | | | | | | |
| Tube withstand @ 37.8°C | | 10.5 MPa | | | | 13.3 MPa | | 10.7 MPa | | 9.0 MPa | |
| Maximum operating pressure | | Dependent on flange rating | | | | | | | | | |
| Sensor housing withstand (5) | | 1.6 MPa | 1.8 MPa | | 1.4 MPa | | - | | | | |
| Flow direction | | Bi-directional | | | | | | | | | |
| Explosion-proof configuration | | CSA, ATEX and IECEx; Refer to Explosion-proof Specifications, page A-22 for details. | | | | | | | | | |
| Dust-tight, waterproof configuration | | IP66/67 | | | | | | | | | |

1. When SUS316L is selected as the wetted parts material, the flange material will be dual-rated SUS316/SUS316L.

2. DIN flanges are only available for meter material SUS316L.

3. ASME 900 flanges are only available in Alloy C22 material.

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

5. 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 Cameron.

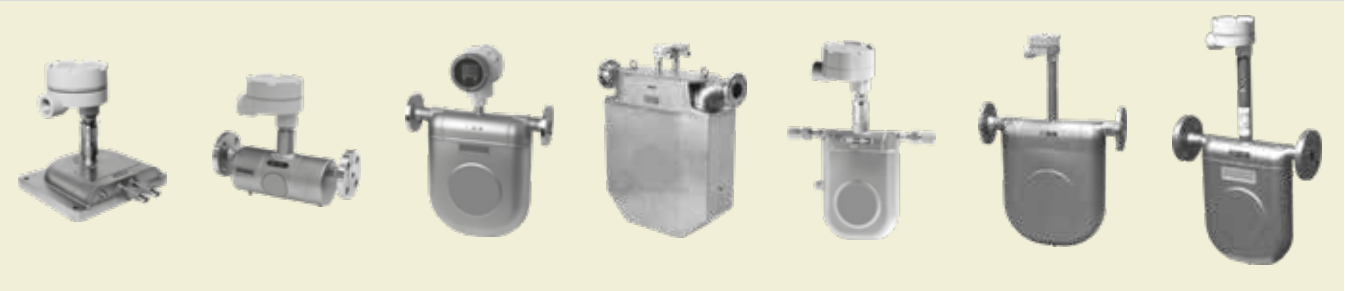
GENERAL PERFORMANCE**Transmitter Specifications**

| 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°C to 55°C (1) |
| Transmission length (separately-mounted) | Maximum 200 m (interconnect 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; EN61326-1: 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 and 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 provided (128x64 dots), backlit (white, orange) ; Two infrared light sensors; Two LEDs (green and red) |
| Weight (approximate) | Integrally-mounted model, 3.6kg; Separately-mounted model, 5.0kg |
| Communication interface (5) | HART (Standard) Protocol Version 7, Bell 202 (3) |
| | 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 | Open drain (equivalent to open collector): 10V to 30V, 50 mADC, ON resistance $\leq 0.6 \Omega$ OR Voltage: 1.5V maximum (low level) to 13V minimum (high level), output impedance: 2.2 k Ω ; Setting range: 0.1 to 10000 Hz (Maximum: 11000 Hz) |
| Analog output | 4 to 20 mADC (maximum load: 600 Ω); 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 $\leq 0.6 \Omega$; Select one from error (default) (4) flow direction, or high/low alarm |
| Status input | Contact-closure (Form "a" contact): 200 Ω maximum (short), 100 k Ω minimum (open); Select one output from remote zero, total reset, 0% signal lock, or function off (default) |

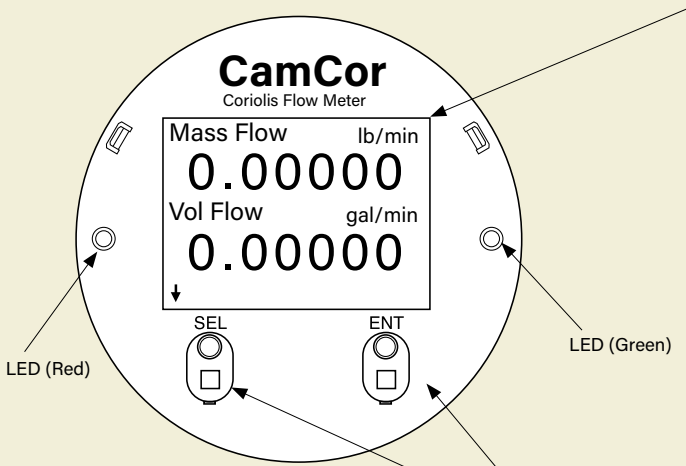
- Below –20°C, the display loses its visibility due to weakened contrast. Both the display and infrared sensor may exhibit slow responses below –20°C.
- If the sensor-to-transmitter communications cable length exceeds 200 meters, consult Cameron.
- HART communications are available only across the Analog Output 1.
- 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.

GENERAL PERFORMANCE

CT Series Models

| Low-flow and Standard 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" | 1/2" | 1/2" to 3" | 4" to 10" | 3/8" and 3/4" | 1" to 6" | 1" to 10" |
|  | | | | | | |

Display



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)

LED (Red)

LED (Green)

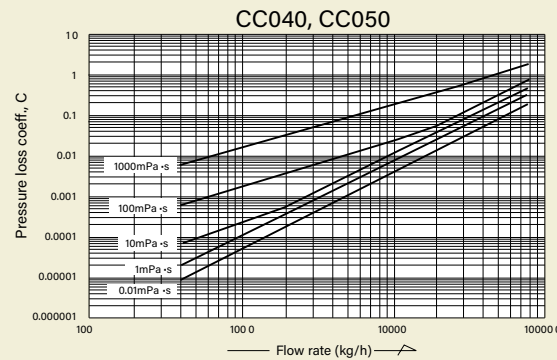
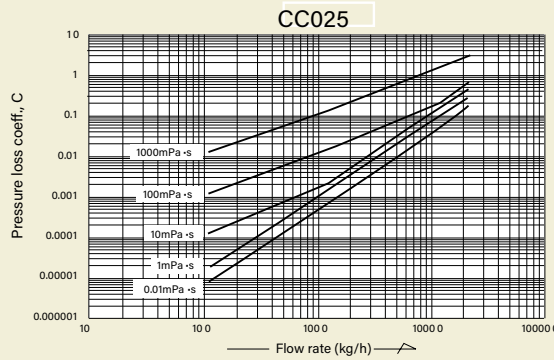
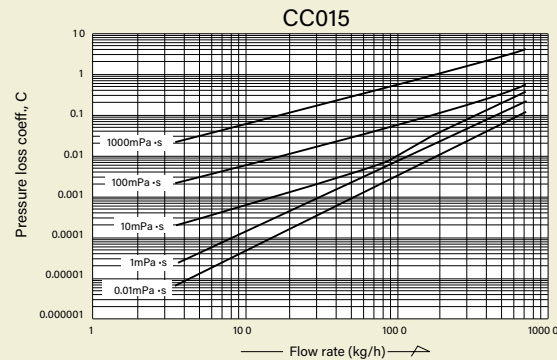
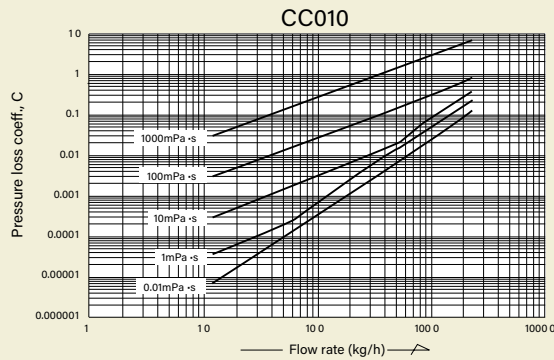
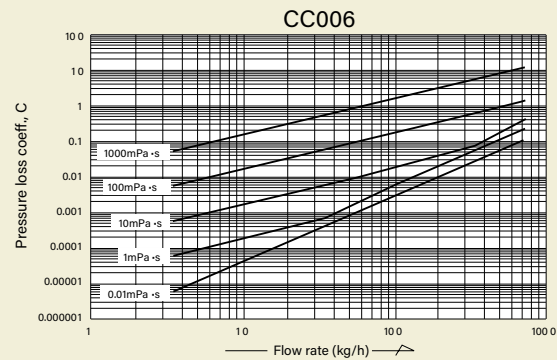
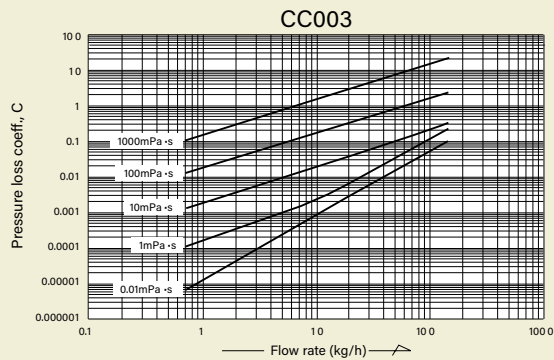
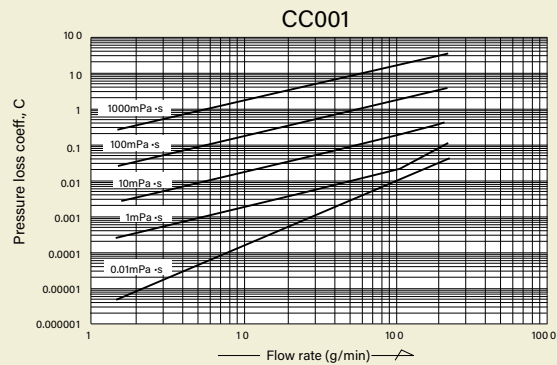
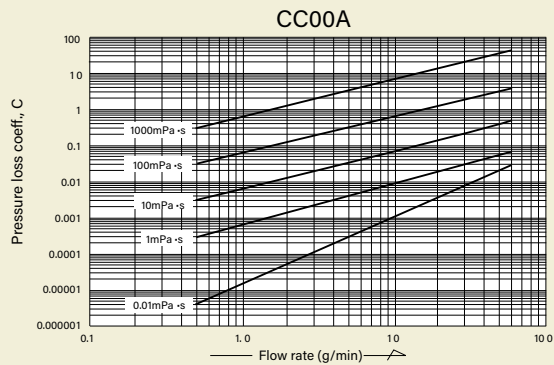
SEL

ENT

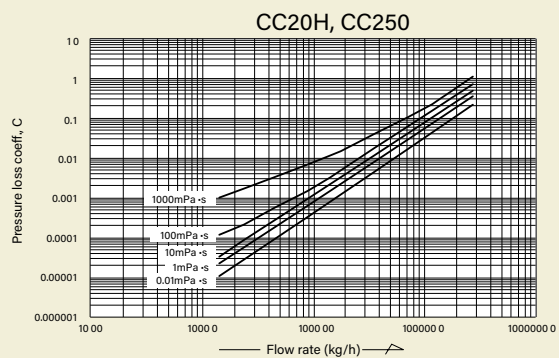
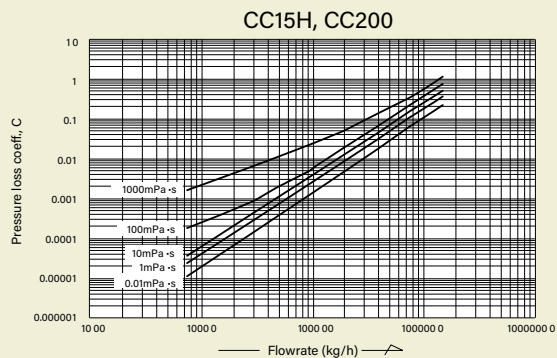
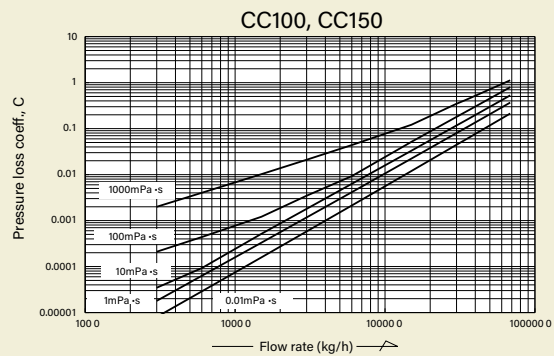
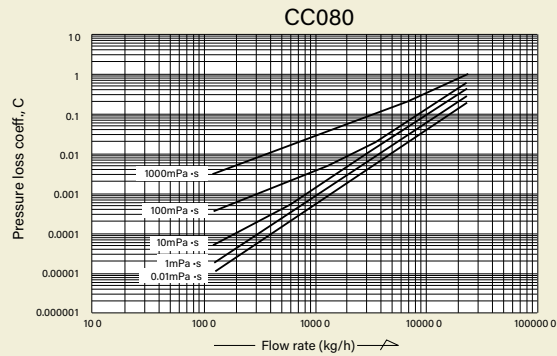
To select the mode, touch the infrared optical sensor panel through the front glass.

- 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 user-defined duration.

Pressure Losses



Pressure Losses

**How to Determine Pressure Loss***

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

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

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

$$\Delta P_2 = C \times \frac{\mu_2}{\mu_1} \times \frac{1}{d}$$

where

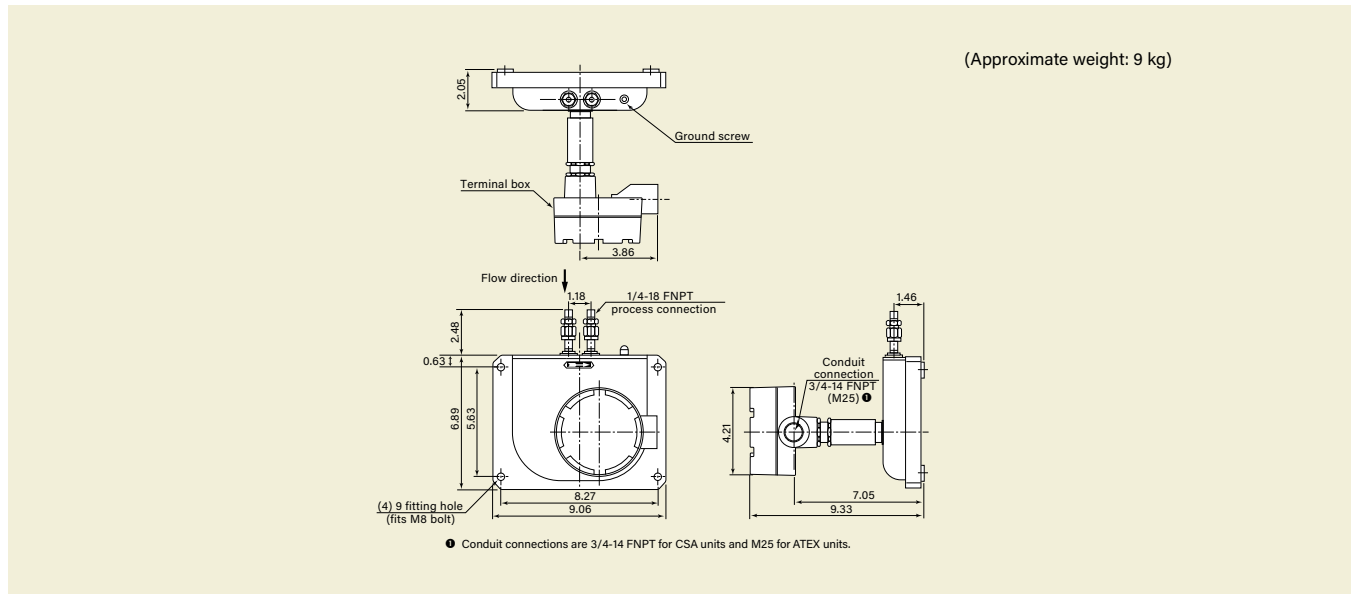
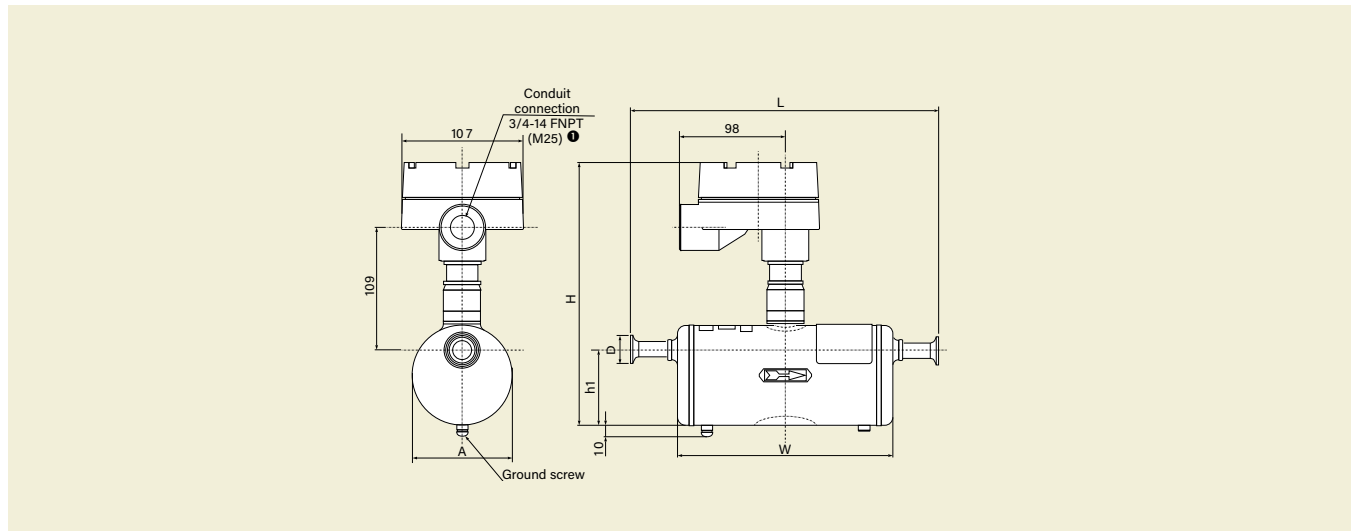
ΔP_2 = Pressure loss of high-viscosity liquid (MPa)

μ_1 = Maximum viscosity shown in the graph (mPa·s)

μ_2 = Viscosity of high-viscosity liquid (mPa·s)

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

C = Pressure loss factor

DIMENSIONS [UNITS IN MILLIMETERS]**Sensor unit: CC00A and CC001****Transmitter: Separately-mounted/threaded connection type****Sensor unit: CC003****Transmitter: Separately-mounted/flange connection type**

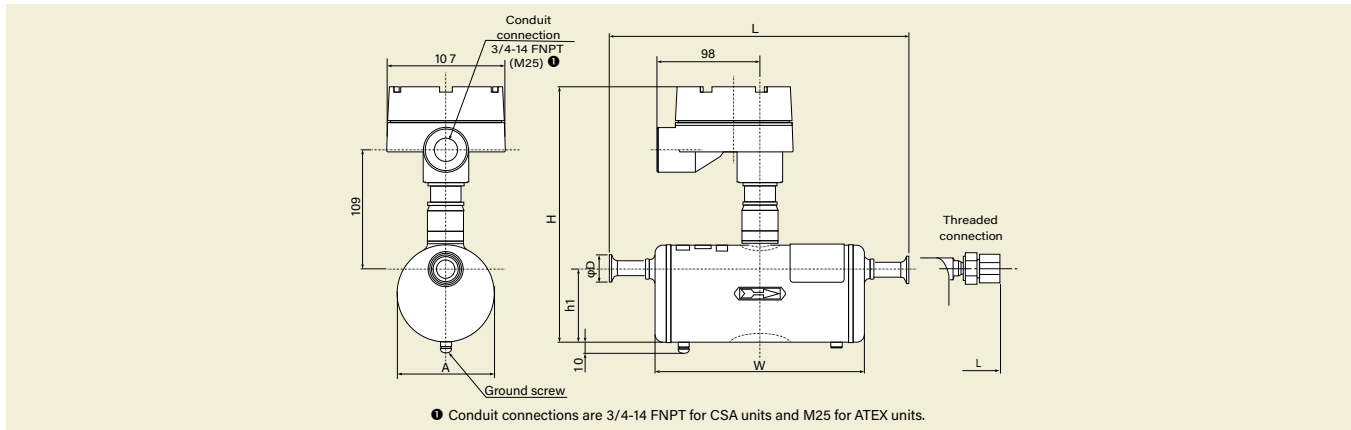
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (kg) |
|-------|--------------------|------|-----|-----|---------|-------------------|-----------|-----------|-----|----|------|-----|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC003 | 10 | 301 | 310 | 322 | 338 | 15 | 275 | 281 | 230 | 67 | 89.1 | 192 | 5.0 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

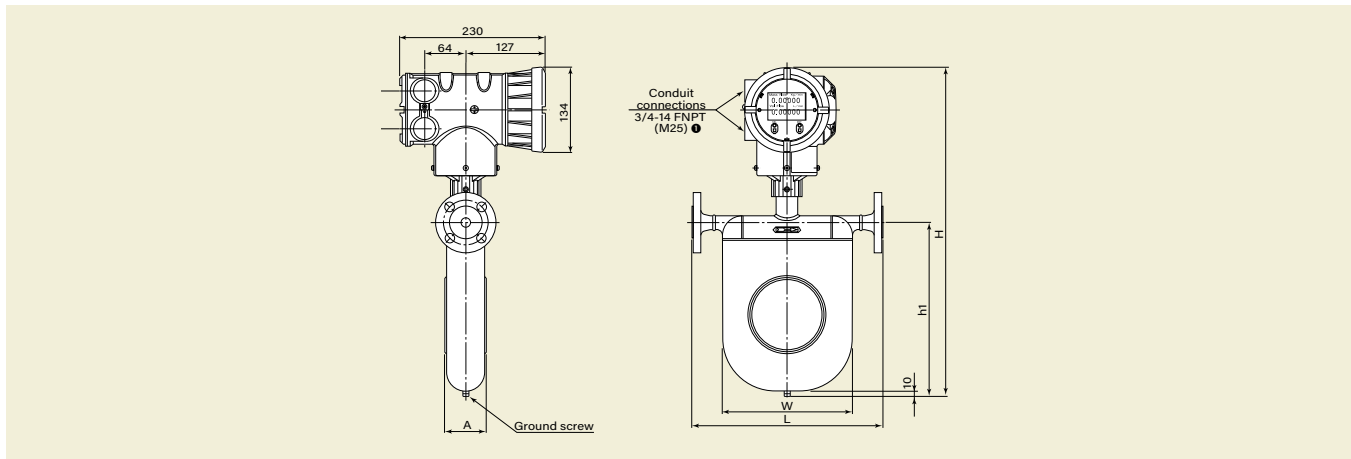
* DIN flanges are only available for meter material SUS316L.

Sensor unit: CC003**Transmitter: Separately-mounted/ferrule or threaded connection type**

| Model | Ferrule | | L | H | h1 | A | D | W | Approx. Weight (lb) |
|-------|--------------|----------------|-----|-----|----|------|-----|----|---------------------|
| | Nominal size | Connection (2) | | | | | | | |
| CC003 | 10 | Ferrule 10A | 265 | 230 | 67 | 89.1 | 192 | 34 | 4.5 |

| Model | Threaded Connection | L | Approx. Weight (kg) |
|-------|---------------------|-----|---------------------|
| CC003 | ½-14 FNPT | 332 | 4.5 |

2. Process connection: A = mm

Sensor unit: CC006 through CC080**Transmitter: Integrally-mounted/flange connection type**

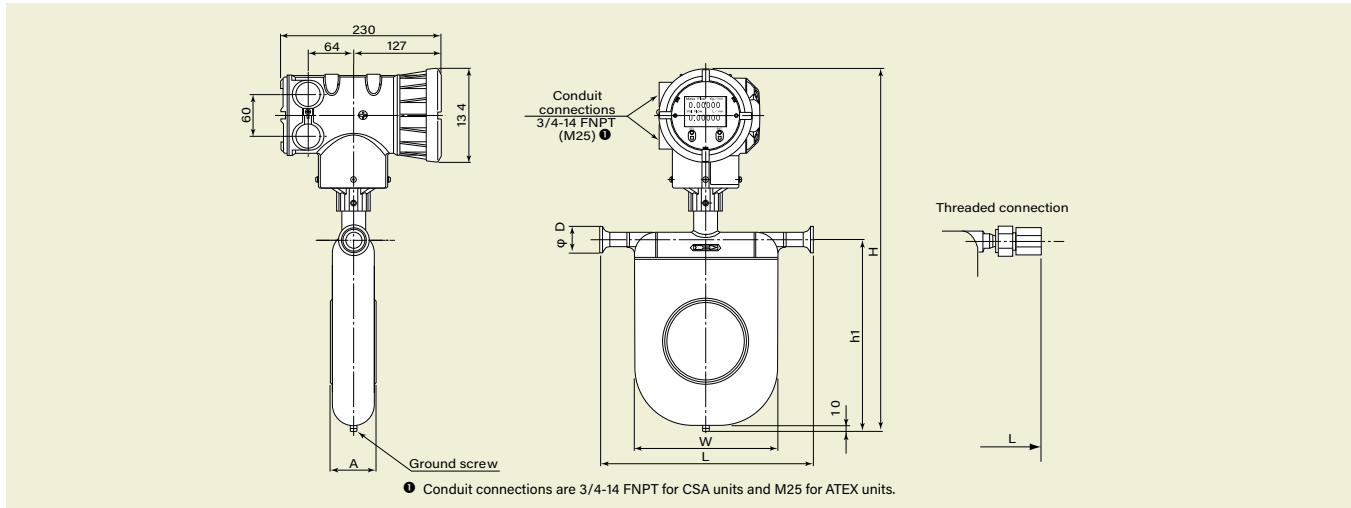
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (kg) |
|-------|--------------------|------|-----|-----|---------|-------------------|-----------|-----------|-----|-----|-----|-----|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC006 | ½ | 268 | 277 | 289 | 306 | 15 | 241 | 247 | 424 | 180 | 53 | 148 | 7 |
| CC010 | ½ | 282 | 291 | 303 | 320 | 15 | 256 | 261 | 462 | 218 | 53 | 163 | 7.8 |
| CC015 | ½ | 325 | 334 | 347 | 363 | 15 | 299 | 305 | 512 | 268 | 65 | 205 | 8.8 |
| CC025 | 1 | 411 | 424 | 437 | 460 | 25 | 376 | 380 | 580 | 329 | 83 | 262 | 13.3 |
| CC040 | 1-½ | 547 | 560 | 575 | 603 | 40 | 507 | 513 | 710 | 452 | 121 | 385 | 23 |
| CC050 | 2 | 550 | 563 | 582 | 641 | 50 | 513 | 519 | | | | | |
| CC080 | 3 | 699 | 717 | 737 | 777 | 80 | 659 | 675 | 880 | 602 | 174 | 510 | 57 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

DIMENSIONS [UNITS IN MILLIMETERS]**Sensor unit: CC006 through CC080****Transmitter: Integrally-mounted/flange connection type**

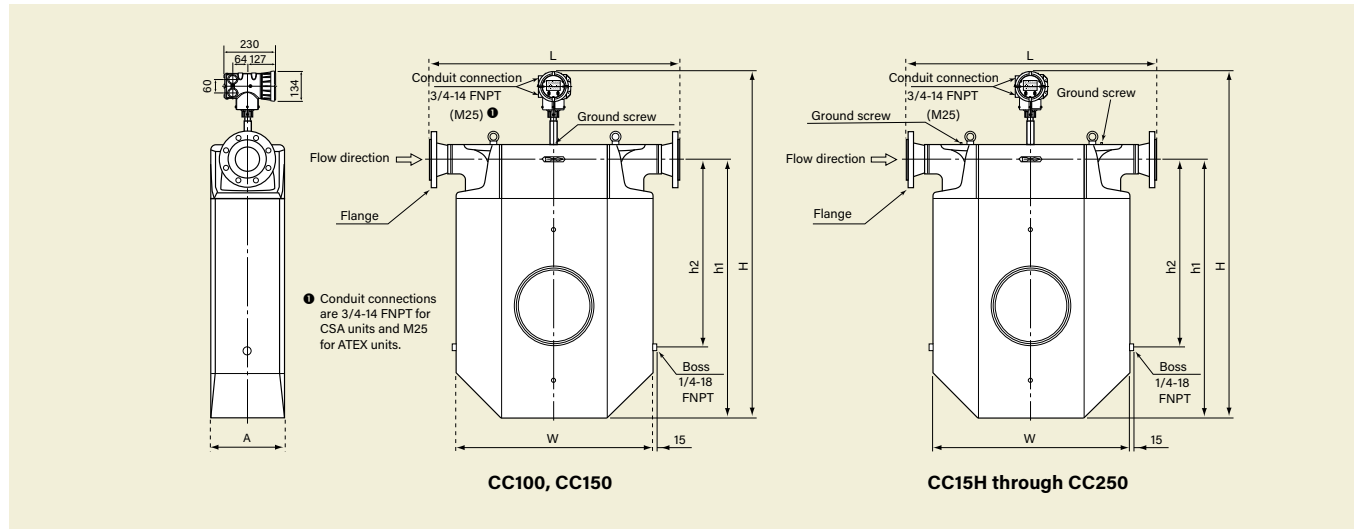
| Model | Ferrule | | L | H | h1 | A | D | W | Approx. Weight (kg) |
|-------|--------------|----------------------------|-------|-----|-----|-----|-----|------|---------------------|
| | Nominal size | Connection (2) | | | | | | | |
| CC006 | 10 | Ferrule 10A | 231.5 | 434 | 180 | 53 | 148 | 34 | 5.7 |
| 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 | 493 | 710 | 452 | 121 | 385 | 50.5 | 19 |
| CC050 | 50 | Ferrule 51 (ISO), IDF 2S | | | | | | 64 | |
| CC080 | 80 | Ferrule 76.1 (ISO), IDF 3S | 658.5 | 880 | 602 | 174 | 510 | 91 | 51 |

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

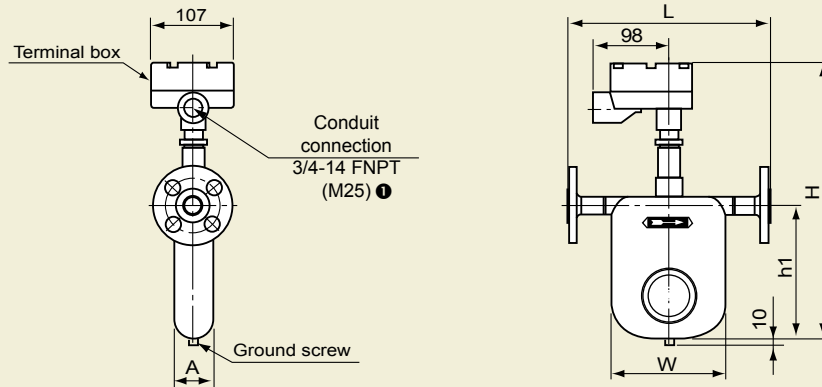
| Model | Threaded Connection | L | Approx. Weight (kg) |
|-------|---------------------|-----|---------------------|
| CC006 | 1/2-14 FNPT | 296 | 5.7 |
| CC010 | 1/2-14 FNPT | 312 | 6.3 |
| CC015 | 3/4-14 FNPT | 382 | 7.1 |

Sensor unit: CC100 through CC250

Transmitter: Internally-mounted/flange connection type



| Model | Flange | | L | H | h1 | h2 | A | W | Approx. Weight (kg) |
|-------|--------------|---------------|------|------|------|-----|-----|------|---------------------|
| | Nominal size | Flange rating | | | | | | | |
| CC100 | 4" | ASME 150 | 1018 | 1403 | 1015 | 660 | 300 | 810 | 231 |
| | | ASME 300 | 1036 | | | | | | |
| | | ASME 600 | 1082 | | | | | | |
| | DN100 | PN 10, 16 | 968 | | | | | | |
| | | PN 25, 40 | 994 | | | | | | |
| CC150 | 6" | ASME 150 | 1318 | 1403 | 1015 | 660 | 300 | 810 | 246 |
| | | ASME 300 | 1338 | | | | | | |
| | | ASME 600 | 1388 | | | | | | |
| | DN150 | PN 10, 16 | 1250 | | | | | | |
| | | PN 25, 40 | 1290 | | | | | | |
| CC15H | 6" | ASME 150 | 1087 | 1604 | 1190 | 851 | 320 | 810 | 310 |
| | | ASME 300 | 1107 | | | | | | |
| | | ASME 600 | 1157 | | | | | | |
| | DN150 | PN 10, 16 | 1019 | | | | | | |
| | | PN 25, 40 | 1059 | | | | | | |
| CC200 | 8" | ASME 150 | 1418 | 1604 | 1190 | 851 | 320 | 810 | 340 |
| | | ASME 300 | 1438 | | | | | | |
| | | ASME 600 | 1494 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 8" | PN 40 | 1390 | 1830 | 1390 | 960 | 420 | 1110 | 610 |
| | | ASME 150 | 1418 | | | | | | |
| | | ASME 300 | 1438 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 10" | PN 40 | 1390 | 1830 | 1390 | 960 | 420 | 1110 | 650 |
| | | ASME 150 | 1773 | | | | | | |
| | | ASME 300 | 1805 | | | | | | |
| | DN250 | PN 10 | 1705 | | | | | | |
| | | PN 16 | 1709 | | | | | | |
| | | PN 25 | 1745 | | | | | | |
| | | PN 40 | 1779 | | | | | | |

DIMENSIONS [UNITS IN MILLIMETERS]**Sensor unit: CC006 through CC080****Transmitter: Separately-mounted/flange connection type**

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

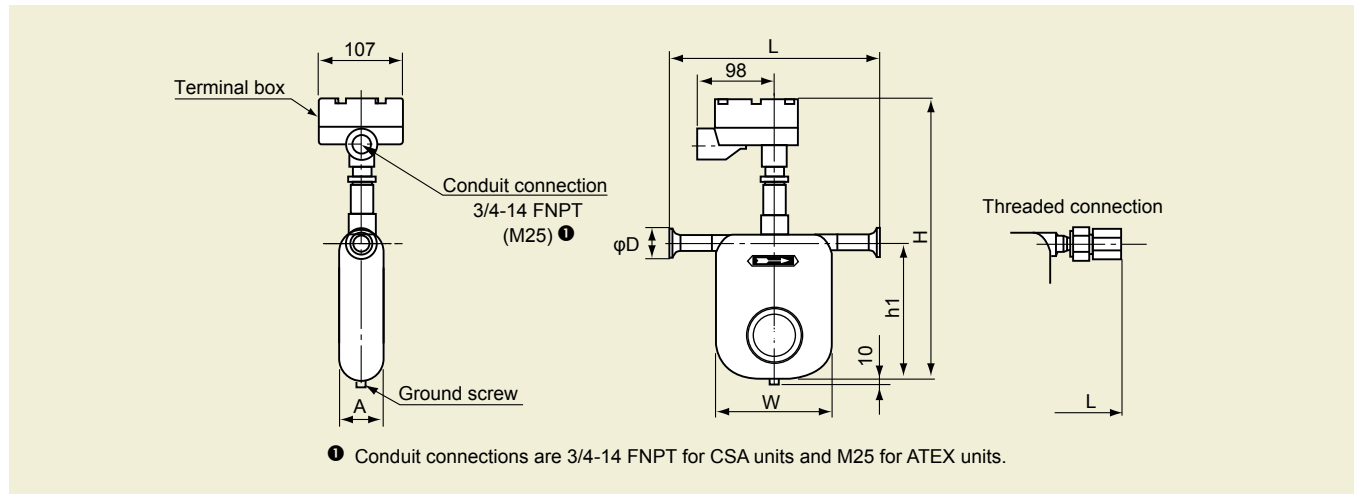
| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (kg) |
|-------|--------------------|------|-----|-----|---------|-------------------|-----------|-----------|-----|-----|-----|-----|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC006 | ½ | 268 | 277 | 289 | 306 | 15 | 241 | 247 | 368 | 180 | 53 | 148 | 4.0 |
| CC010 | ½ | 282 | 291 | 303 | 320 | 15 | 256 | 261 | 406 | 218 | 53 | 163 | 4.7 |
| CC015 | ½ | 325 | 334 | 347 | 363 | 15 | 299 | 305 | 456 | 268 | 65 | 205 | 5.6 |
| CC025 | 1 | 411 | 424 | 437 | 460 | 25 | 376 | 380 | 524 | 329 | 83 | 262 | 10.4 |
| CC040 | 1-½ | 547 | 560 | 575 | 603 | 40 | 507 | 513 | 654 | 452 | 121 | 385 | 20 |
| CC050 | 2 | 550 | 563 | 582 | 641 | 50 | 513 | 519 | | | | | |
| CC080 | 3 | 699 | 717 | 737 | 777 | 80 | 659 | 675 | 824 | 602 | 174 | 510 | 54 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

DIMENSIONS [UNITS IN MILLIMETERS]**Sensor unit: CC006 through CC080****Transmitter separately-mounted/ferrule or threaded connection type**

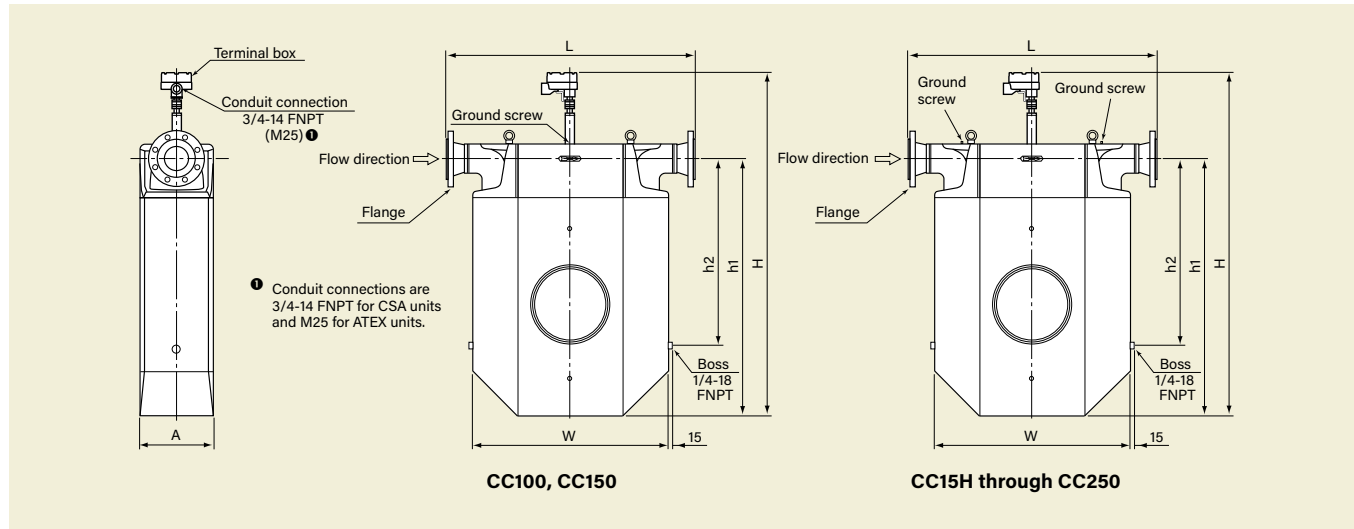
| Model | Ferrule | | L | H | h1 | A | W | D | Approx. Weight (kg) |
|-------|--------------|----------------------------|-------|-----|-----|-----|-----|------|---------------------|
| | Nominal size | Connection (2) | | | | | | | |
| CC006 | 10 | Ferrule 10A | 231.5 | 368 | 180 | 53 | 148 | 34 | 2.8 |
| 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 | 493 | 654 | 452 | 121 | 385 | 50.5 | 16 |
| CC050 | 50 | Ferrule 51 (ISO), IDF 2S | | | | | | 64 | |
| CC080 | 80 | Ferrule 76.1 (ISO), IDF 3S | 658.5 | 824 | 602 | 174 | 510 | 91 | 48 |

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

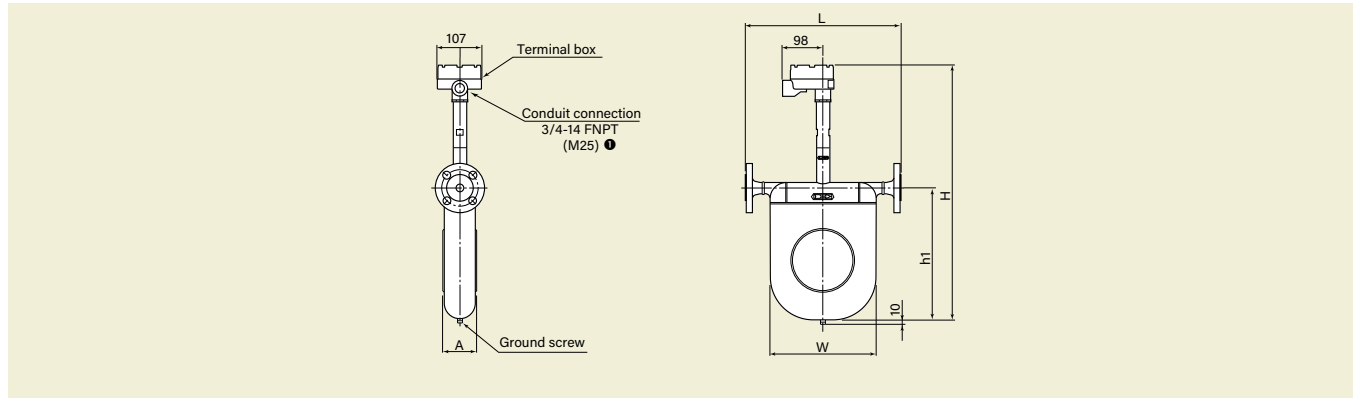
| Model | Threaded Connection | L | Approx. Weight (lb) |
|-------|---------------------|-----|---------------------|
| CC006 | ½-14 FNPT | 296 | 2.8 |
| CC010 | ½-14 FNPT | 312 | 3.4 |
| CC015 | ¾-14 FNPT | 382 | 4.2 |

Sensor unit: CC100 through CC250

Transmitter: Separately-mounted/flange connection type



| Model | Flange | | L | H | h1 | h2 | A | W | Approx. Weight (kg) |
|-------|--------------|---------------|------|------|------|-----|-----|------|---------------------|
| | Nominal size | Flange rating | | | | | | | |
| CC100 | 4" | ASME 150 | 1018 | 1353 | 1015 | 660 | 300 | 810 | 231 |
| | | ASME 300 | 1036 | | | | | | |
| | | ASME 600 | 1082 | | | | | | |
| | DN100 | PN 10, 16 | 968 | | | | | | |
| | | PN 25, 40 | 994 | | | | | | |
| CC150 | 6" | ASME 150 | 1318 | 1353 | 1015 | 660 | 300 | 810 | 246 |
| | | ASME 300 | 1338 | | | | | | |
| | | ASME 600 | 1388 | | | | | | |
| | DN150 | PN 10, 16 | 1250 | | | | | | |
| | | PN 25, 40 | 1290 | | | | | | |
| CC15H | 6" | ASME 150 | 1087 | 1554 | 1190 | 851 | 320 | 810 | 310 |
| | | ASME 300 | 1107 | | | | | | |
| | | ASME 600 | 1157 | | | | | | |
| | DN150 | PN 10, 16 | 1019 | | | | | | |
| | | PN 25, 40 | 1059 | | | | | | |
| CC200 | 8" | ASME 150 | 1418 | 1554 | 1190 | 851 | 320 | 810 | 340 |
| | | ASME 300 | 1438 | | | | | | |
| | | ASME 600 | 1494 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 8" | PN 40 | 1390 | 1780 | 1390 | 960 | 420 | 1110 | 610 |
| | | ASME 150 | 1418 | | | | | | |
| | | ASME 300 | 1438 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 10" | PN 40 | 1390 | 1780 | 1390 | 960 | 420 | 1110 | 650 |
| | | ASME 150 | 1773 | | | | | | |
| | | ASME 300 | 1805 | | | | | | |
| | DN250 | PN 10 | 1705 | | | | | | |
| | | PN 16 | 1709 | | | | | | |
| | | PN 25 | 1745 | | | | | | |
| | | PN 40 | 1779 | | | | | | |

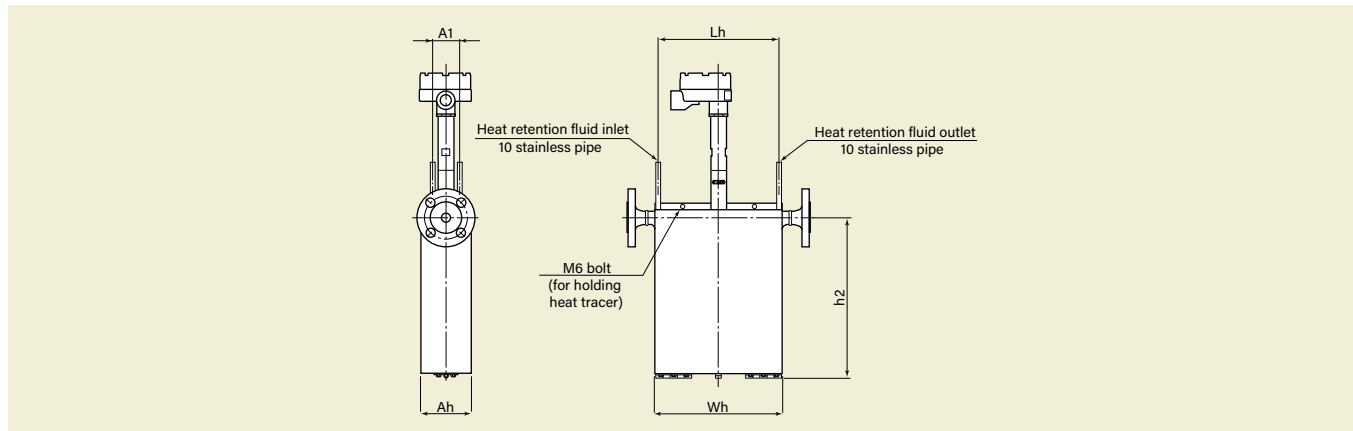
DIMENSIONS [UNITS IN MILLIMETERS]**Sensor unit: CC025 through CC080 (High-temperature models)****Transmitter: Separately-mounted/flange connection type**

| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (kg) |
|-------|--------------------|------|-----|-----|---------|-------------------|-----------|-----------|-----|-----|-----|-----|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC025 | 1 | 411 | 424 | 437 | — | 25 | 376 | 380 | 638 | 329 | 83 | 262 | 10.9 |
| CC040 | 1-½ | 547 | 560 | 575 | — | 40 | 507 | 513 | 768 | 452 | 121 | 385 | 20.3 |
| CC050 | 2 | 550 | 563 | 582 | — | 50 | 513 | 519 | | | | | 20.7 |
| CC080 | 3 | 699 | 717 | 737 | 777 | 80 | 659 | 675 | 960 | 602 | 174 | 510 | 54.1 |

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

2. ASME 900 flanges are only available in Alloy C22 material.

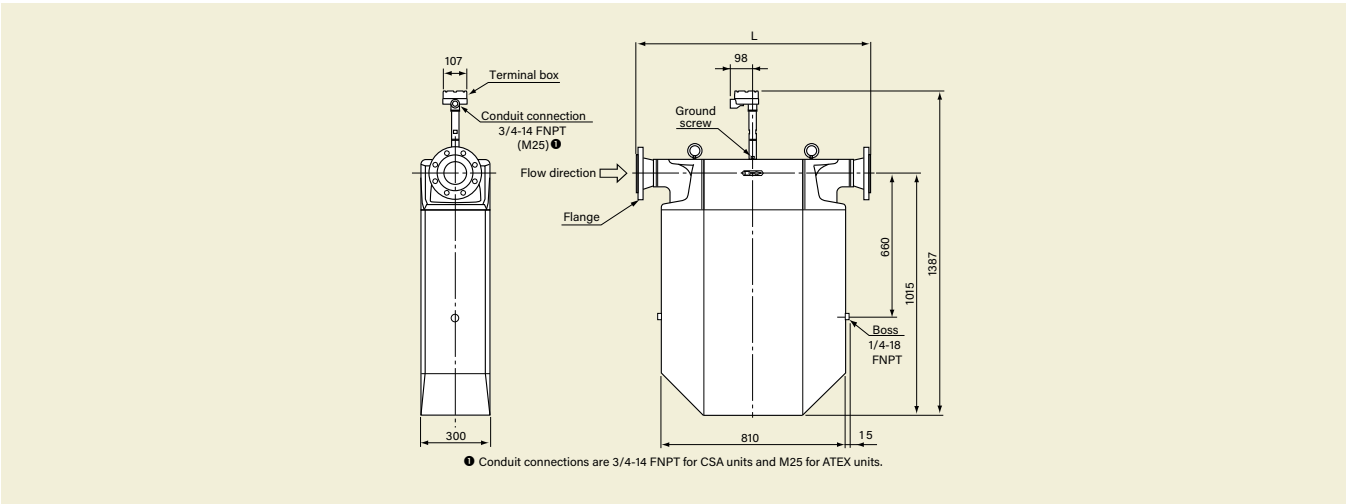
* DIN flanges are only available for meter material SUS316L.

Sensor unit: CC025 through CC080 (High-temperature models)**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 | 1-½ | HT1-040A | 376 | 464 | 144 | 70 | 390 | 31.8 |
| CC050 | 2 | | | | | | | 32.2 |
| CC080 | 3 | HT1-080A | 501 | 612 | 198 | 110 | 545 | 75.1 |

DIMENSIONS [UNITS IN MILLIMETERS]

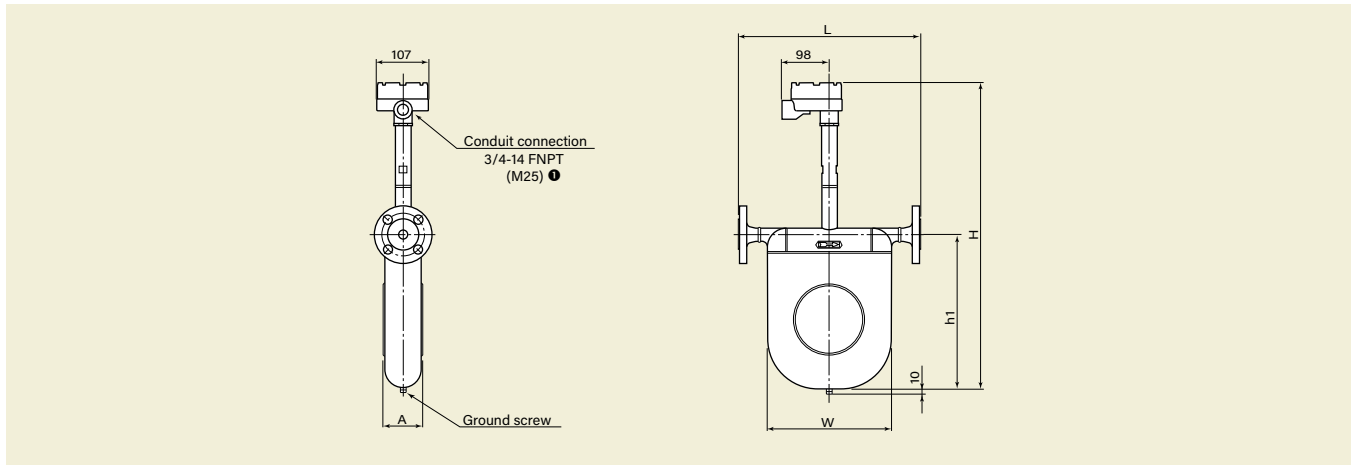
Sensor unit: CC025 through CC080 (High-temperature models)
Transmitter: Separately-mounted/flange connection type



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

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

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



| Model | Nominal size (in.) | ASME | | | | Nominal size (DN) | DIN | | H | h1 | A | W | Approx. Weight (kg) |
|-------|--------------------|------|-----|-----|---------|-------------------|-----------|-----------|-----|-----|-----|-----|---------------------|
| | | 150 | 300 | 600 | 900 (2) | | PN 10, 16 | PN 25, 40 | | | | | |
| | | L | | | | | L | | | | | | |
| CC025 | 1 | 411 | 424 | 437 | 460 | 25 | 376 | 380 | 660 | 329 | 83 | 262 | 10.9 |
| CC040 | 1-½ | 547 | 560 | 575 | 603 | 40 | 507 | 513 | 790 | 452 | 121 | 385 | 20.3 |
| CC050 | 2 | 550 | 583 | 582 | 641 | 50 | 513 | 519 | | | | | 21 |
| CC080 | 3 | 699 | 717 | 727 | 777 | 80 | 659 | 675 | 960 | 602 | 174 | 510 | 54 |

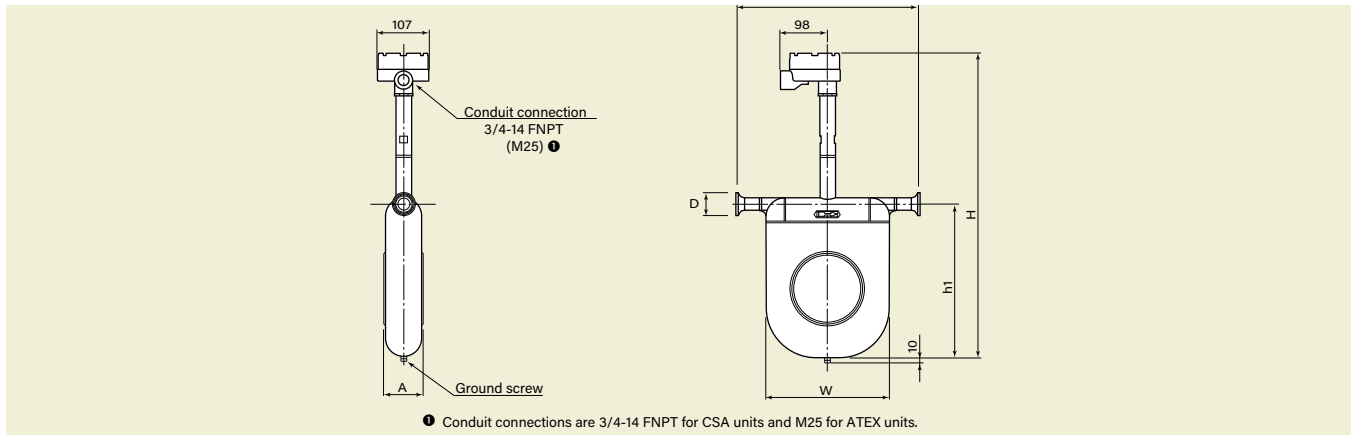
1. Conduit connections are 3/4-14 FNPT for CSA units and M25 for ATEX units.

2. Alloy C22 and ASME 900 is only available with the high-temperature CC080 model.

* This table only applies to meter material SUS316L. For information about material Alloy C22, please consult Cameron.

* DIN flanges are only available for meter material SUS316L.

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

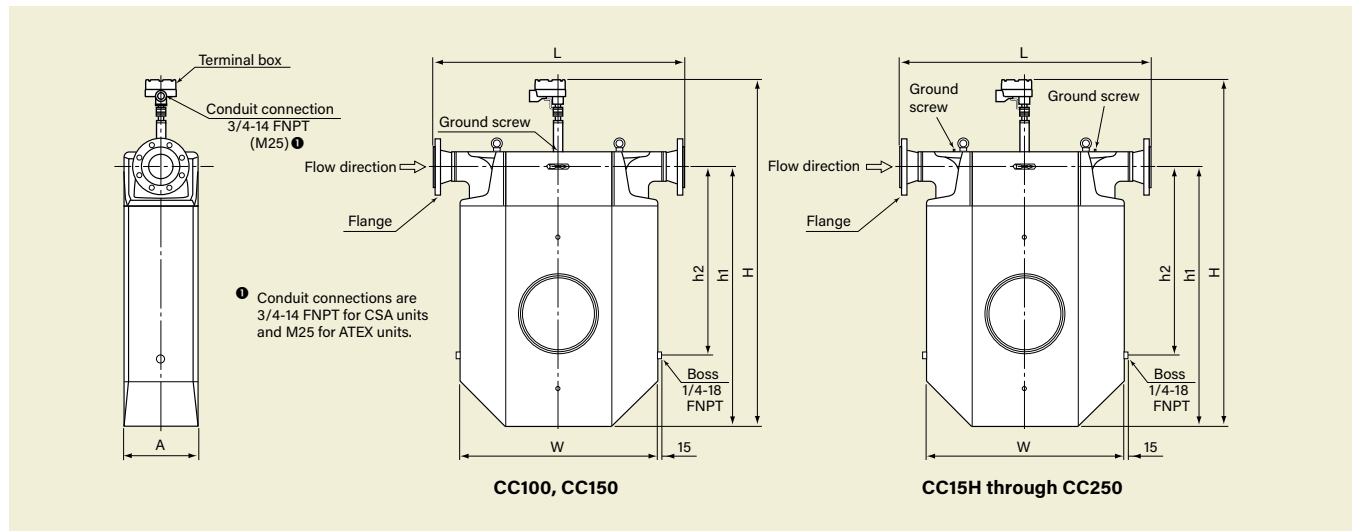


| Model | Nominal size (in.) | Heat Tracer Model Compatibility | L | H | h1 | A | W | D | Approx. Weight (kg) |
|-------|--------------------|---------------------------------|-------|-----|-----|-----|-----|------|---------------------|
| CC025 | 25 | Ferrule 25 (ISO), IDF 1S | 370 | 660 | 329 | 83 | 262 | 50.5 | 8.3 |
| CC040 | 40 | Ferrule 38 (ISO), IDF 1.5S | 493 | 790 | 452 | 121 | 385 | 50.5 | 17 |
| CC050 | 50 | Ferrule 51 (ISO), IDF 2S | | | | | | 64 | |
| CC080 | 80 | Ferrule 76.1 (ISO), IDF 3S | 658.5 | 960 | 602 | 174 | 510 | 91 | 48 |

2. Process connection: S = in.

Sensor unit: CC100 through CC250 (Low-temperature models)

Transmitter: Separately-mounted/flange connection type

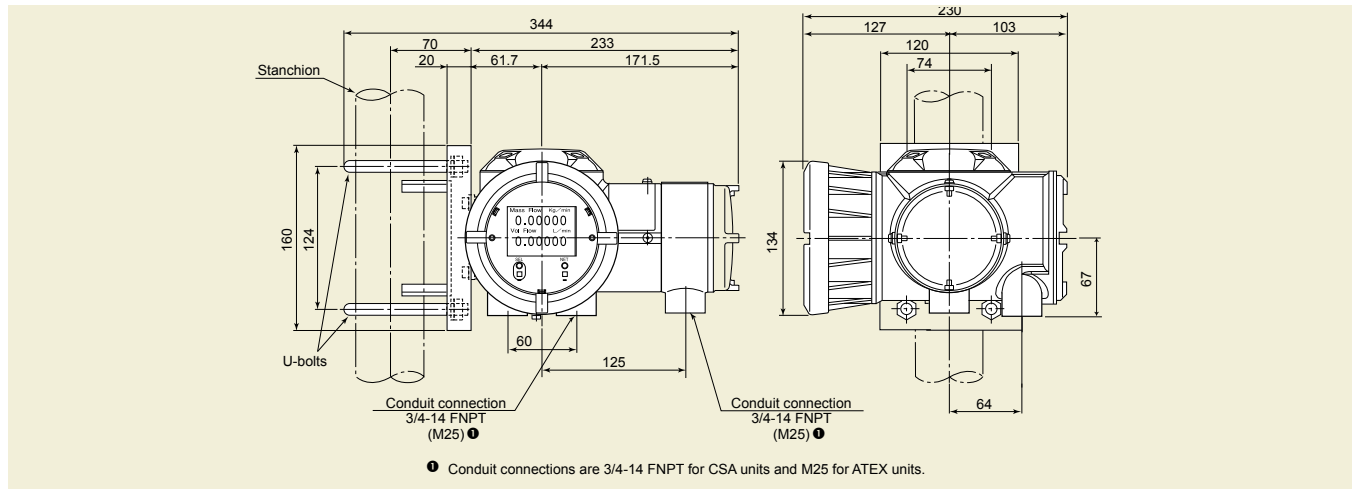


| Model | Flange | | L | H | h1 | A | D | W | Approx. Weight (kg) |
|-------|--------------|---------------|------|------|------|-----|-----|------|---------------------|
| | Nominal size | Flange rating | | | | | | | |
| CC100 | 4" | ASME 150 | 1018 | 1387 | 1015 | 660 | 300 | 810 | 231 |
| | | ASME 300 | 1036 | | | | | | |
| | | ASME 600 | 1082 | | | | | | |
| | DN100 | PN 10, 16 | 968 | | | | | | |
| | | PN 25, 40 | 994 | | | | | | |
| CC150 | 6" | ASME 150 | 1318 | 1387 | 1015 | 660 | 300 | 810 | 246 |
| | | ASME 300 | 1338 | | | | | | |
| | | ASME 600 | 1388 | | | | | | |
| | DN150 | PN 10, 16 | 1250 | | | | | | |
| | | PN 25, 40 | 1290 | | | | | | |
| CC15H | 6" | ASME 150 | 1087 | 1588 | 1190 | 851 | 320 | 810 | 310 |
| | | ASME 300 | 1107 | | | | | | |
| | | ASME 600 | 1157 | | | | | | |
| | DN150 | PN 10, 16 | 1019 | | | | | | |
| | | PN 25, 40 | 1059 | | | | | | |
| CC200 | 8" | ASME 150 | 1418 | 1588 | 1190 | 851 | 320 | 810 | 340 |
| | | ASME 300 | 1438 | | | | | | |
| | | ASME 600 | 1494 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 8" | PN 40 | 1390 | 1814 | 1390 | 960 | 420 | 1110 | 610 |
| | | ASME 150 | 1418 | | | | | | |
| | | ASME 300 | 1438 | | | | | | |
| | DN200 | PN 10, 16 | 1338 | | | | | | |
| | | PN 25 | 1374 | | | | | | |
| CC20H | 10" | PN 40 | 1390 | | | | | | |
| | | ASME 150 | 1773 | 1814 | 1390 | 960 | 420 | 1110 | 650 |
| | | ASME 300 | 1805 | | | | | | |
| | DN250 | PN 10 | 1705 | | | | | | |
| | | PN 16 | 1709 | | | | | | |
| | | PN 25 | 1745 | | | | | | |
| | | PN 40 | 1779 | | | | | | |

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

DIMENSIONS [UNITS IN MILLIMETERS]

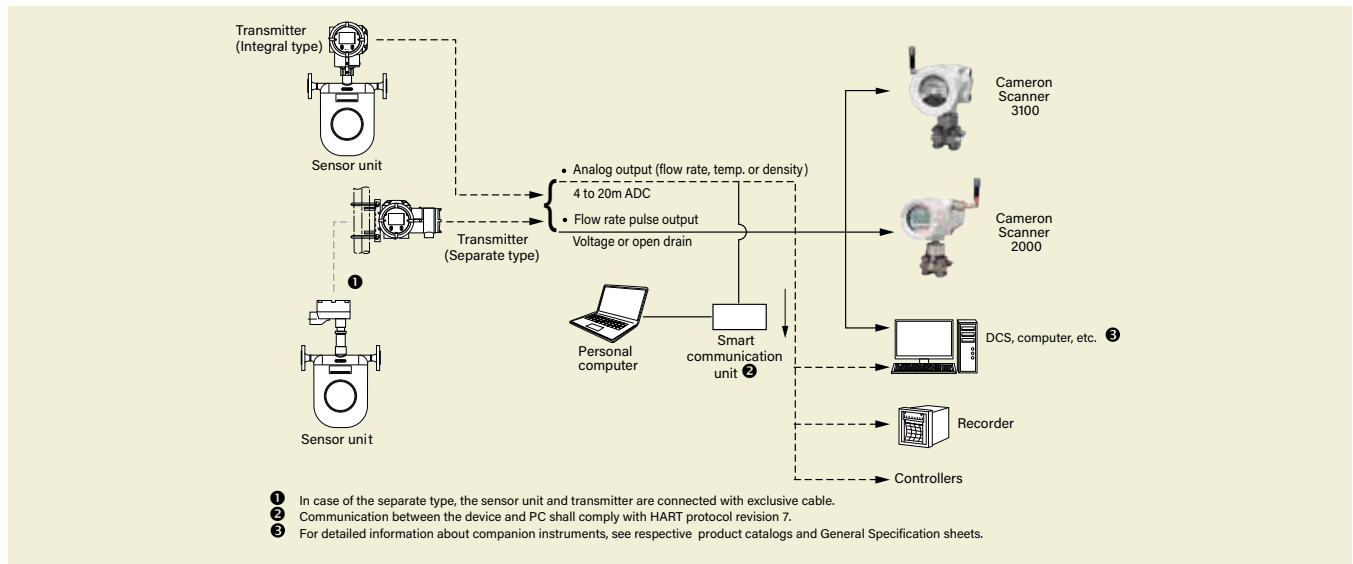
Separately-mounted Transmitter



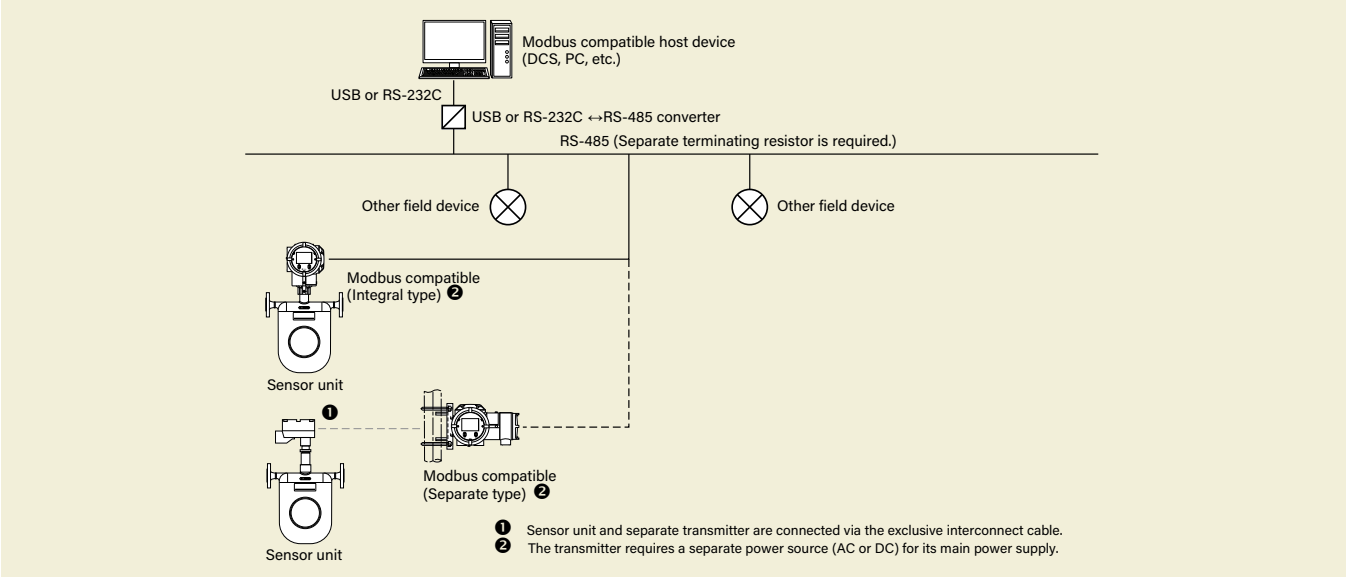
Pipe mounting hardware (U-bolts) are furnished as standard accessories. The pipe must be provided by the customer.

REMOTE MEASURING SYSTEM

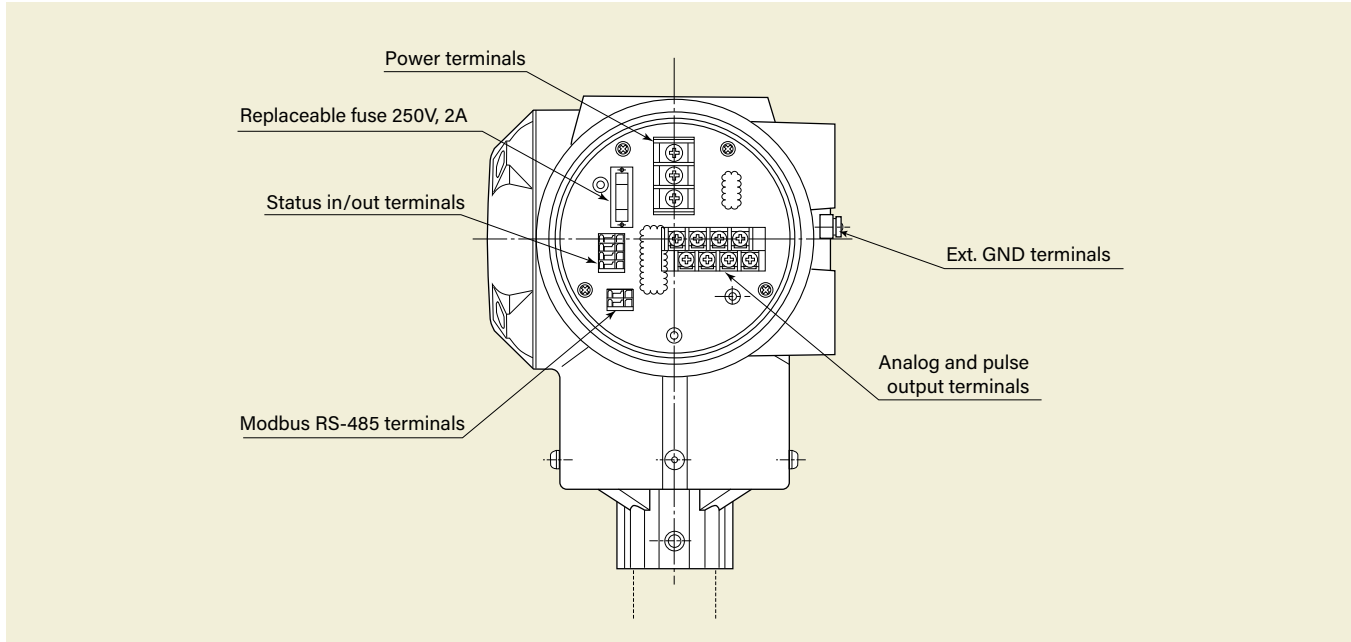
HART Protocol



Modbus



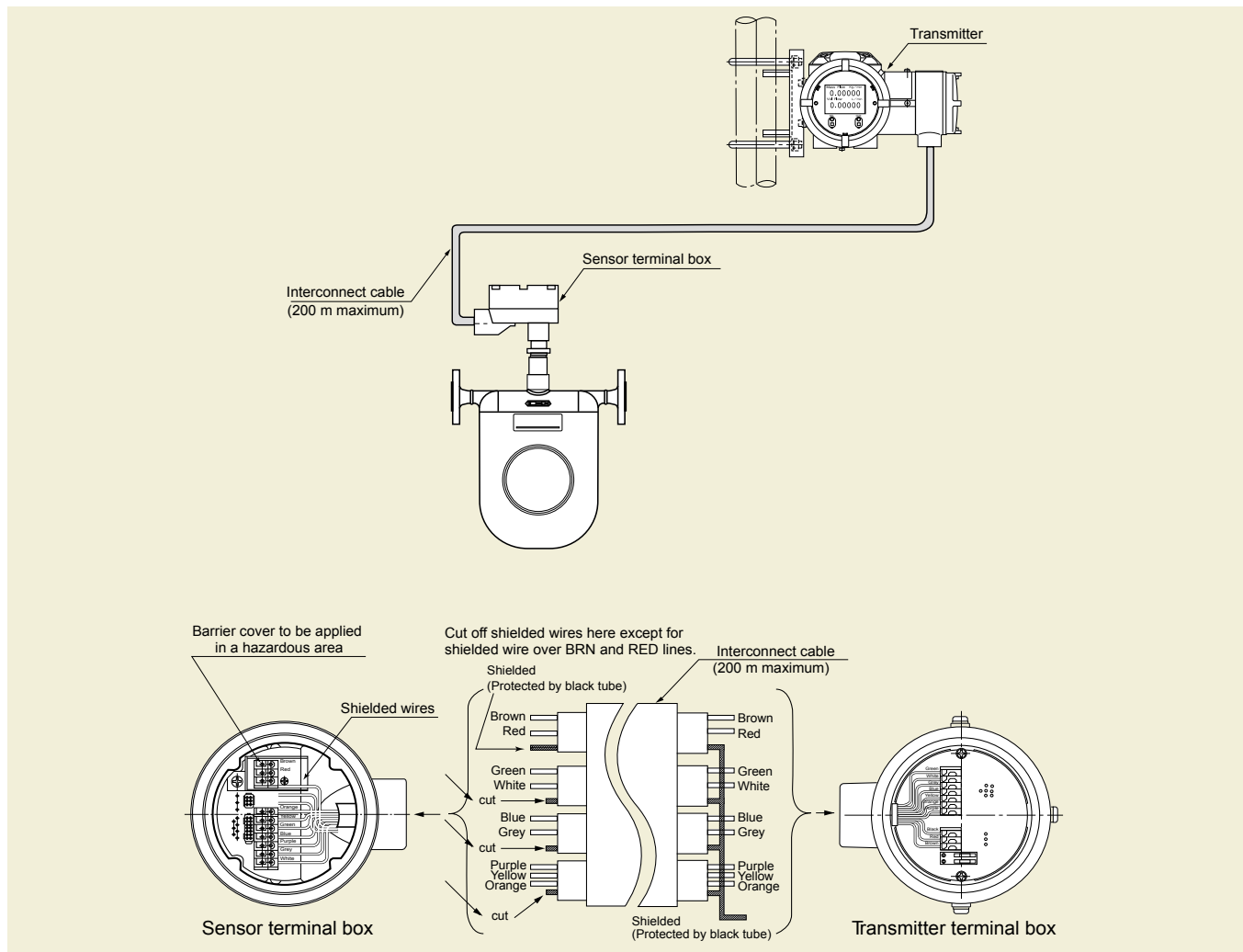
Transmitter Power and Input/Output Signal Wiring



| Item | Label | Description | Remarks |
|--------|---------|--|---|
| Signal | 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 (-) | | |
| | P1 (+) | Pulse Output 1 (voltage/open drain) | Maximum pulse output (voltage/open drain) transmission length: + 10 m @ 10 kHz + 100 m @ 1 kHz + 1 m @ 100 Hz Minimum conductor size: 0.75mm ² |
| | P1 (-) | | |
| | P2 (+) | Pulse Output 2 (voltage/open drain) | |
| | P2 (-) | | |
| | SI (+) | Status Input (contact) | — |
| | SI (-) | | |
| | SO (+) | Status Output (open drain) | |
| | SO (-) | | |
| Power | I/O (+) | Expanded Input/Output (Modbus communication, etc.) | For Modbus communications: + Maximum transmission length: 1200m + Minimum conductor size: 0.75mm ² |
| | I/O (-) | | |
| | L (+) | Power (with DC power: +) | — |
| | GND | Earth Ground | |
| | N (-) | Power (with DC power: -) | |

WIRING DIAGRAMS

Wiring Between Sensor Unit and Separately-mounted Transmitter



Use dedicated interconnect cable and prepare shielded wire as follows.

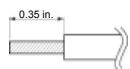
Transmitter end

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

Sensor end

- + 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.
- + 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

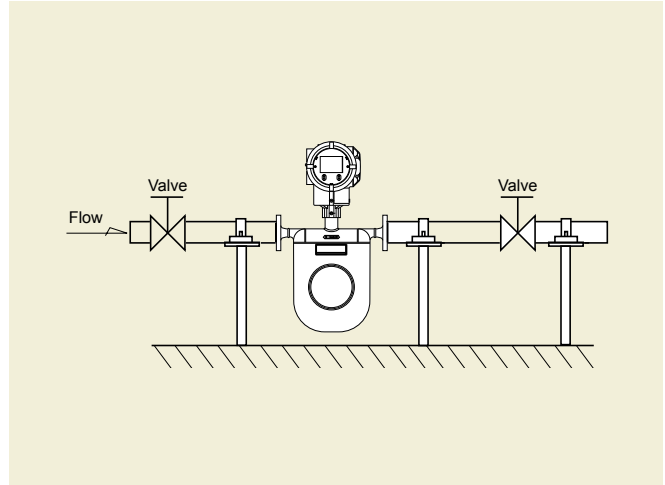
Typical Installation

1. Avoid pipeline stresses on the meter.
2. The meter should be supported near each process connection, as shown in the illustration on the right.
3. Avoid supporting the meter body directly.
4. 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.
5. 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

1. 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 $\pm 55^{\circ}\text{F}/\text{min.}$ for both heating and cooling.



Prevention of Cavitation (Gas Flash Off)

Cavitation can cause a loss in Coriolis meter measurement accuracy. To prevent cavitation, maintain line pressure upstream and downstream of the meter.

Avoid piping arrangements that open the line to the atmosphere immediately downstream of the meter. Particular care must be taken in low pressure applications and with high vapor pressure liquids, such as NGLs (natural gas liquids). It is recommended the back pressure immediately downstream of the meter be kept above the value calculated by the formula below:

$$P_d = 2\Delta P + 1.25P_v$$

where P_d : Downstream pressure (psia)

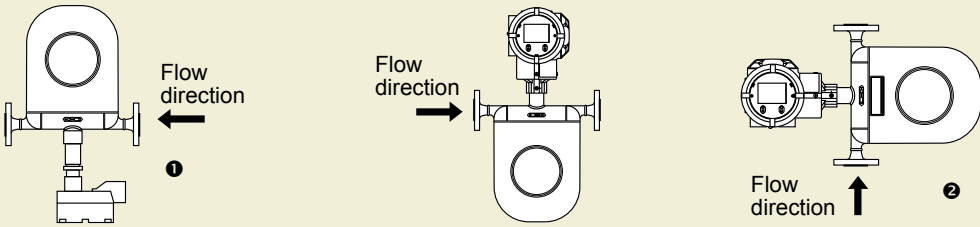
ΔP : Pressure drop across meter (psid)

P_v : Vapor pressure of the process fluid (psia)

Calculation based on API Manual of Petroleum Measurement Standards, Chapter 5.6, Section 6.3.2.

Physical Orientation
CC003 through CC250

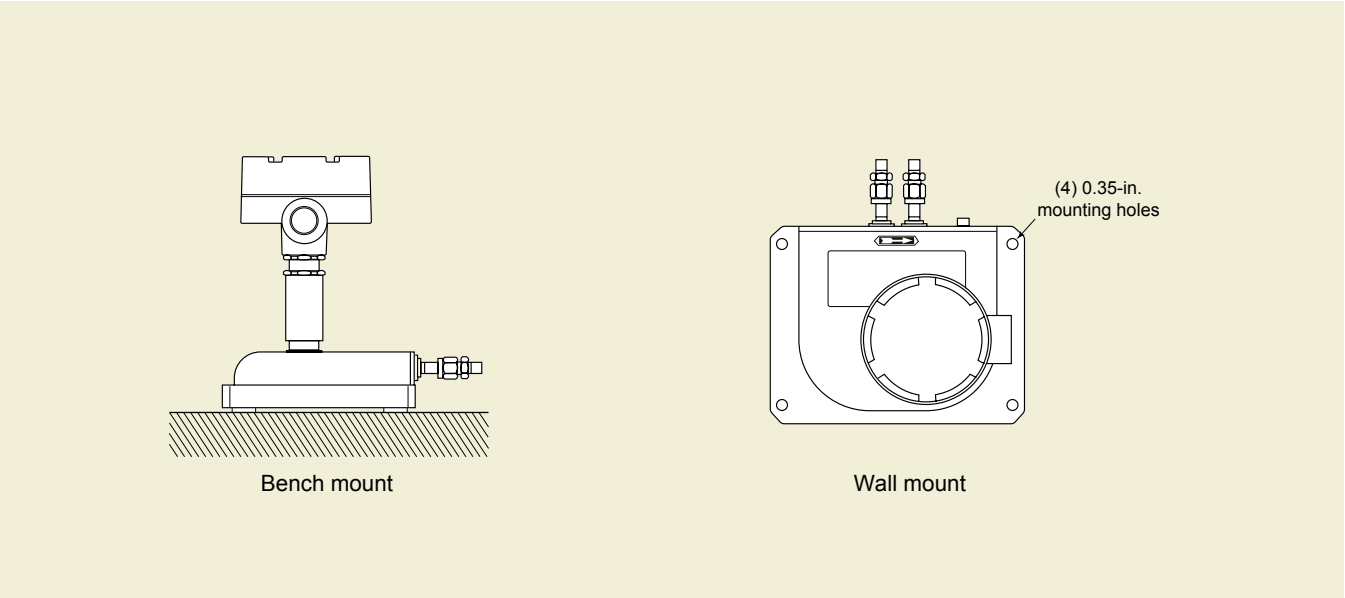
Recommended physical orientation varies with the type of process fluid.
(No. 2 in the figure below shows basic orientation for liquid service.)
Physical orientation must be specified at the time of order.

| Horizontal run | | Vertical run |
|--|------|---------------------------------|
| No.1 | No.2 | No.3 |
| Orientation | | |
|  | | |
| Fluids | | |
| + Gases | | + Slurries (requiring cleaning) |
| + Slurries | | + Liquids |
| | | + Gases |

1. 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
- + Sensor ratings: Class I, Zone 1, Ex ib IIB T4 Gb
Class I, Zone 1, AEx ib IIB T4 Gb
- + Transmitter and sensor ambient temperature: -40°C to 55°C
- + Sensor to be connected: CC006 through CC250
- + Fluid temperature: -40°C to 580°C
- + 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 T6 Gb
- + 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
- + Transmitter ambient temperature: -40°C to 55°C
- + Communication: HART, Modbus

Meter Combinations

| Meter Temperature Category | | | Transmitter | | | Hazardous Location Temperature Class | | | |
|----------------------------|--------------|-------------|-------------------------|---------------|---------------|--------------------------------------|-------------|-----------------|-------------------|
| Model | Model Code 7 | Description | Nominal Media Temp (°C) | Model Code 12 | Mounting Type | Model Code 18 | Description | Media Temp (°C) | Ambient Temp (°C) |
| CC00A and CC001 | 2 | Standard B | 130° to 200° | 2 | Separate | 3 | Class T3 | -40° to 150° | -40° to 60° |
| CC003 | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| CC006 through CC015 | 1 | Standard A | -40° to 130° | 1 | Integral | 4 | Class T4 | -40° to 80° | -40° to 60° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| CC025 through CC080 | 1 | Standard A | -40° to 130° | 1 | Integral | 4 | Class T4 | -40° to 80° | -40° to 60° |
| | 1 | Standard A | -40° to 130° | 2 | Separate | 3 | Class T3 | -40° to 150° | -40° to 60° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 3 | High Temp | 200° to 350° | 2 | Separate | 1 | Class T1 | -20° to 350° | -20° to +50° |
| CC100 through CC150 | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | -20° to +50° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 3 | High Temp | Under 350° | 2 | Separate | 1 | Class T1 | -20° to 350° | -20° to +50° |
| CC15H through CC250 | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | -20° to +50° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | -20° to +50° |

Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections.

Temperature Class describes "T" codes, which define temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections. If a meter will be used in a process with temperature lower than -30°C, Charpy impact testing is required.

EXPLOSION-PROOF SPECIFICATIONS**ATEX/IECEX****Integral Type**

- + Transmitter ratings: Zones 1 and 2
II 2G Ex d ib IIC T4 Gb
- + Sensor ratings: Zones 1 and 2
II 2G Ex ib IIC T4 Gb
- + Transmitter and sensor ambient temperature: -40°C to 55°C
- + Sensor to be connected: CC006 through CC250
- + Fluid temperature: -40°C to 80°C
- + Communication: HART, Modbus

Separate Type

- + Transmitter rating: II 2G Ex d [ib] II C T6 Gb
- + Sensor ratings: II 2G Ex ib II C T1, T2, T3, T4, T5
- + Transmitter ambient temperature: -40°C to 55°C
- + Communication: HART, Modbus

Meter Combinations

| Meter Temperature Category | | | Transmitter | | | Hazardous Location Temperature Class | | | |
|----------------------------|--------------|-------------|-------------------------|---------------|---------------|--------------------------------------|-------------|-----------------|-------------------|
| Model | Model Code 7 | Description | Nominal Media Temp (°C) | Model Code 12 | Mounting Type | Model Code 18 | Description | Media Temp (°C) | Ambient Temp (°C) |
| CC00A and CC001 | 2 | Standard B | 130° to 200° | 2 | Separate | 3 | Class T3 | -40° to 150° | -40° to 60° |
| CC003 | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| CC006 through CC015 | 1 | Standard A | -40° to 130° | 1 | Integral | 4 | Class T4 | -40° to 80° | -40° to 60° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| CC025 through CC080 | 1 | Standard A | -40° to 130° | 1 | Integral | 4 | Class T4 | -40° to 80° | -40° to 60° |
| | 1 | Standard A | -40° to 130° | 2 | Separate | 3 | Class T3 | -40° to 150° | -40° to 60° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 3 | High Temp | 200° to 350° | 2 | Separate | 1 | Class T1 | -20° to 350° | -20° to +50° |
| CC100 through CC150 | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | -20° to +50° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 3 | High Temp | Under 350° | 2 | Separate | 1 | Class T1 | -20° to 350° | -20° to +50° |
| CC15H through CC250 | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | -20° to +50° |
| | 2 | Standard B | 130° to 200° | 2 | Separate | 2 | Class T2 | -40° to 200° | -40° to 60° |
| | 4 | Low Temp | -200° to 50° | 2 | Separate | 5 | Class T5 | -200° to 50° | |

Temperature Category describes the nominal temperature rating of the meter, with no consideration for hazardous area certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections.

Temperature Class describes "T" codes, which define temperature limitations that apply if the meter is installed in a hazardous area, per the CSA certification. See [Appendix B: Product Codes and Inquiry Form, page B-1](#) for product code selections. 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 A and Low-Flow Meters)

| Item | Product Codes | | | | | | | | | | | | | | | | | | Description | Availability (Y/N) | | | | | | | | | |
|---------------------------------------|---------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|--|--------------------|---|---|---|---|---|---|---|--|--|
| Model | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | | | | | | | | | | |
| Connection nominal size (mm) (1) | | | 0 | 0 | A | | | | | | | | | | | | | | CamCor CT Series Coriolis Flow Meter | | | | | | | | | | |
| | | | 0 | 0 | 1 | | | | | | | | | | | | | | 0.75 mm sensor; 1/4-18 NPT threaded connection | | | | | | | | | | |
| | | | 0 | 0 | 3 | | | | | | | | | | | | | | 1 mm sensor; 1/4-18 NPT threaded connection | | | | | | | | | | |
| | | | 0 | 0 | 6 | | | | | | | | | | | | | | 3 mm sensor; 1/2" flange | | | | | | | | | | |
| | | | 0 | 1 | 0 | | | | | | | | | | | | | | 6 mm sensor; 1/2" flange | | | | | | | | | | |
| | | | 0 | 1 | 5 | | | | | | | | | | | | | | 10 mm sensor; 1/2" flange | | | | | | | | | | |
| | | | 0 | 2 | 5 | | | | | | | | | | | | | | 15 mm sensor; 1/2" flange | | | | | | | | | | |
| | | | 0 | 4 | 0 | | | | | | | | | | | | | | 25 mm sensor; 1" flange | | | | | | | | | | |
| | | | 0 | 5 | 0 | | | | | | | | | | | | | | 40 mm sensor; 1-1/2" flange | | | | | | | | | | |
| | | | 0 | 8 | 0 | | | | | | | | | | | | | | 50 mm sensor; 2" flange | | | | | | | | | | |
| Fluid category | | | | | | L | | | | | | | | | | | | | Liquid service | Y | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | G | | | | | | | | | | | | | Gas service | Y | Y | Y | Y | Y | N | N | Y | | |
| Temperature category (2) | | | | | | | 1 | | | | | | | | | | | | Standard A (media under 266°F/130°C) | N | N | Y | Y | Y | N | N | N | | |
| | | | | | | | 2 | | | | | | | | | | | | Standard B (media under 392°F/200°C) | Y | Y | Y | Y | Y | N | N | N | | |
| | | | | | | | 3 | | | | | | | | | | | | High-temperature (media under 662°F/350°C) | N | N | N | N | N | Y | Y | N | | |
| | | | | | | | 4 | | | | | | | | | | | | Low-temperature (media -328°F to 122°F/-200°C to 50°C) | N | N | N | N | N | N | N | Y | | |
| Pressure category | | | | | | | | 1 | | | | | | | | | | | Standard | Y | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | 3 | | | | | | | | | | | High-pressure service (3) | N | N | N | Y | N | N | N | N | | |
| Wetted materials (5) | | | | | | | | | S | | | | | | | | | | SUS316L | Y | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | H | | | | | | | | | | Alloy C22 (4) | N | Y | Y | Y | Y | N | Y | Y | | |
| | | | | | | | | | Z | | | | | | | | | | Other than above | Y | Y | Y | Y | Y | Y | Y | Y | | |
| Process connection | | | | | | | | | | A | | | | | | | | | Threaded | Y | Y | Y | Y | N | N | N | N | | |
| | | | | | | | | | | B | | | | | | | | | Ferrule | N | Y | Y | Y | Y | N | N | N | | |
| | | | | | | | | | | H | | | | | | | | | ASME 150 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | J | | | | | | | | | ASME 300 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | K | | | | | | | | | ASME 600 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | T | | | | | | | | | ASME 900 (6) | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | P | | | | | | | | | DIN PN 10 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | Q | | | | | | | | | DIN PN 16 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | R | | | | | | | | | DIN PN 25 | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | S | | | | | | | | | DIN PN 40 | N | Y | Y | Y | Y | Y | Y | Y | | |
| Transmitter mounting (7) | | | | | | | | | | Z | | | | | | | | | Other than above | N | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | | 1 | | | | | | | | Integrally-mounted | N | N | Y | Y | Y | N | N | N | | |
| Power source | | | | | | | | | | | 2 | | | | | | | | Separately-mounted | Y | Y | Y | Y | Y | Y | Y | Y | | |
| | | | | | | | | | | | | 1 | | | | | | | 20 to 30 VDC | | | | | | | | | | |
| Analog output (8) (9) | | | | | | | | | | | | | | A | | | | | 85 to 264 VAC, 50/60 Hz (Safety rated 100 to 240 VAC) | | | | | | | | | | |
| | | | | | | | | | | | | | | B | | | | | Output 1: Mass flow | | | | | | | | | | |
| | | | | | | | | | | | | | | C | | | | | Output 2: Mass flow | | | | | | | | | | |
| | | | | | | | | | | | | | | D | | | | | Output 2: Density | | | | | | | | | | |
| | | | | | | | | | | | | | | E | | | | | Output 2: Temperature | | | | | | | | | | |
| | | | | | | | | | | | | | | F | | | | | Output 2: Volume flow (live density) | | | | | | | | | | |
| | | | | | | | | | | | | | | G | | | | | Output 2: Volume flow (fixed density) | | | | | | | | | | |
| | | | | | | | | | | | | | | H | | | | | Output 2: Temperature | | | | | | | | | | |
| | | | | | | | | | | | | | | I | | | | | Output 2: Density (live density) | | | | | | | | | | |
| | | | | | | | | | | | | | | J | | | | | Output 2: Density | | | | | | | | | | |
| Pulse output | | | | | | | | | | | | | | K | | | | | Output 1: Volume flow (live density) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Output 2: Temperature | | | | | | | | | | |
| | | | | | | | | | | | | | | A | | | | | Output 1: Mass flow | | | | | | | | | | |
| | | | | | | | | | | | | | | B | | | | | Output 1: Volume flow (live density) | | | | | | | | | | |
| | | | | | | | | | | | | | | C | | | | | Output 1: Volume flow (fixed density) | | | | | | | | | | |
| | | | | | | | | | | | | | | D | | | | | None | | | | | | | | | | |
| | | | | | | | | | | | | | | E | | | | | Output 2: Mass flow | | | | | | | | | | |
| | | | | | | | | | | | | | | F | | | | | Output 2: Volume flow (live density) | | | | | | | | | | |
| | | | | | | | | | | | | | | G | | | | | Output 2: Volume flow (fixed density) | | | | | | | | | | |
| | | | | | | | | | | | | | | H | | | | | Output 2: Volume flow (live density) | | | | | | | | | | |
| Pulse output type | | | | | | | | | | | | | | I | | | | | Output 2: Volume flow (fixed density) | | | | | | | | | | |
| | | | | | | | | | | | | | | J | | | | | Output 2: Mass flow | | | | | | | | | | |
| Communication interface | | | | | | | | | | | | | | K | | | | | Output 2: Mass flow | | | | | | | | | | |
| | | | | | | | | | | | | | | | 1 | | | | Open collector pulse | | | | | | | | | | |
| Explosion-proof rating | | | | | | | | | | | | | | | | | | | Voltage pulse | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | HART communication (Hybrid Bell 202) | | | | | | | | | | |
| Explosion-proof temperature class (2) | | | | | | | | | | | | | | | | | | | Modbus communication (RS-485) and HART communication (Hybrid Bell 202) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | ATEX, IECEx | | | | | | | | | | |
| Explosion-proof temperature class (2) | | | | | | | | | | | | | | | | | | | CSA | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Sensor: T1 (separate transmitter only, high-temperature models CC025 through CC150 only) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Sensor: T2 (separate transmitter only, models CC003 through CC250 only) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Sensor: T3 (separate transmitter only, models CC00A through CC080 only) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Sensor: T4 (integral transmitter, models CC006 through CC080 only) | | | | | | | | | | |

1. 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.

3. If "High-pressure Service" is selected, "Threaded" is the only valid process connection.

4. If wetted material "H" is selected for Model CC006, the unit will be provided with a "floating" flange connection.

5. Material code H (Alloy C22) available only on models C003 thru CC080.

6. ASME Class 900 flanges require Alloy C22 sensor material; therefore, wetted material "H" must be selected.

7. 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.

8. 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.

9. "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 | Product Codes | | | | | | | | | | | | | | | | | | Description | | | | | | |
|---------------------------------------|--------------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------|----|--|--|--|--|--|
| Model | C | P | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | | | | |
| Connection nominal size (mm) (1) | | | 0 | 0 | A | | | | | | | | | | | | | | | | CamCor CT Series Coriolis Flow Meter | Availability (Y/N) | CC100, CC150, CC180, CC200, CC20H, CC250 | CC100, CC150 (High-temperature <662°F) | CC150, CC16H, CC200, CC20H, CC250 (Low-temp) |
| | | | 0 | 0 | 1 | | | | | | | | | | | | | | | | 100 mm sensor; 4" flange | | | | |
| | | | 0 | 0 | 3 | | | | | | | | | | | | | | | | 150 mm sensor; 6" flange | | | | |
| | | | 0 | 0 | 6 | | | | | | | | | | | | | | | | 200 mm sensor; 6" flange | | | | |
| | | | 0 | 1 | 0 | | | | | | | | | | | | | | | | 200 mm sensor; 8" flange | | | | |
| | | 0 | 1 | 5 | | | | | | | | | | | | | | | | | 250 mm sensor; 8" flange | | | | |
| Fluid category | | | | | | L | | | | | | | | | | | | | | | Liquid service | Y | Y | Y | |
| | | | | | | | 2 | | | | | | | | | | | | | | Standard B (media under 392°F/200°C) | Y | N | N | |
| | | | | | | | 3 | | | | | | | | | | | | | | High-temperature (media under 662°F/350°C) | N | Y | N | |
| | | | | | | | 4 | | | | | | | | | | | | | | Low-temperature (media –328°F to 122°F/–200°C to 50°C) | N | N | Y | |
| Pressure category | | | | | | | | 1 | | | | | | | | | | | | | Standard | Y | Y | Y | |
| Wetted materials (5) | | | | | | | | | S | | | | | | | | | | | | SUS316L | Y | Y | Y | |
| | | | | | | | | | | H | | | | | | | | | | | ASME 150 | Y | Y | Y | |
| | | | | | | | | | | J | | | | | | | | | | | ASME 300 | Y | Y | Y | |
| | | | | | | | | | | K | | | | | | | | | | | ASME 600 (2) | Y | Y | Y | |
| | | | | | | | | | | T | | | | | | | | | | | DIN PN10 | Y | Y | Y | |
| | | | | | | | | | | Q | | | | | | | | | | | DIN PN16 | Y | Y | Y | |
| | | | | | | | | | | R | | | | | | | | | | | DIN PN25 | Y | Y | Y | |
| | | | | | | | | | | S | | | | | | | | | | | DIN PN40 | Y | Y | Y | |
| | | | | | | | | | | Z | | | | | | | | | | | Other than above | Y | Y | Y | |
| | Transmitter mounting (3) | | | | | | | | | | | 1 | | | | | | | | | | Integrally-mounted | Y | N | N |
| | | | | | | | | | | | | 2 | | | | | | | | | | Separately-mounted | Y | Y | Y |
| Power source | | | | | | | | | | | | | | 1 | | | | | | | 20 to 30 VDC | | | | |
| | | | | | | | | | | | | | | 2 | | | | | | | 85 to 264 VAC, 50/60 Hz (Safety rated 100 to 240 VAC) | | | | |
| Analog output (4) (5) | | | | | | | | | | | | | | | A | | | | | | Output 1: Mass flow | Output 2: Mass flow | | | |
| | | | | | | | | | | | | | | | B | | | | | | Output 1: Mass flow | Output 2: Density | | | |
| | | | | | | | | | | | | | | | C | | | | | | Output 1: Mass flow | Output 2: Temperature | | | |
| | | | | | | | | | | | | | | | D | | | | | | Output 1: Mass flow | Output 2 : Volume flow (live density) | | | |
| | | | | | | | | | | | | | | | E | | | | | | Output 1: Mass flow | Output 2 : Volume flow (fixed density) | | | |
| | | | | | | | | | | | | | | | F | | | | | | Output 1: Density | Output 2 : Temperature | | | |
| | | | | | | | | | | | | | | | G | | | | | | Output 1: Volume flow (live density) | Output 2 : Density (live density) | | | |
| | | | | | | | | | | | | | | | H | | | | | | Output 1: Volume flow (fixed density) | Output 2 : Density | | | |
| | | | | | | | | | | | | | | | J | | | | | | Output 1: Volume flow (live density) | Output 2 : Temperature | | | |
| | | | | | | | | | | | | | | | K | | | | | | Output 1: Volume flow (fixed density) | Output 2 : Temperature | | | |
| | | | | | | | | | | | | | | | | | A | | | | Output 1: Mass flow | None | | | |
| Pulse output (4) (5) | | | | | | | | | | | | | | | B | | | | | | Output 1: Volume flow (live density) | None | | Single Pulse | |
| | | | | | | | | | | | | | | | C | | | | | | Output 1: Volume flow (fixed density) | None | | | |
| | | | | | | | | | | | | | | | D | | | | | | Output 1: Mass flow | Output 2 : Mass flow | | | |
| | | | | | | | | | | | | | | | E | | | | | | Output 1: Mass flow | Output 2 : Volume flow (live density) | | | |
| | | | | | | | | | | | | | | | F | | | | | | Output 1: Mass flow | Output 2 : Volume flow (fixed density) | | | |
| | | | | | | | | | | | | | | | G | | | | | | Output 1: Volume flow (live density) | Output 2 : Volume flow (live density) | | Dual Pulse | |
| | | | | | | | | | | | | | | | H | | | | | | Output 1: Volume flow (fixed density) | Output 2: Volume flow (fixed density) | | | |
| | | | | | | | | | | | | | | | J | | | | | | Output 1: Volume flow (live density) | Output 2 : Mass flow | | | |
| | | | | | | | | | | | | | | | K | | | | | | Output 1: Volume flow (fixed density) | Output 2 : Mass flow | | | |
| | Pulse output type | | | | | | | | | | | | | | | | | 1 | | | | Open collector pulse | | | |
| | | | | | | | | | | | | | | | | | | 2 | | | | Voltage pulse | | | |
| Communication interface | | | | | | | | | | | | | | | | | | 1 | | | HART communication (Hybrid Bell 202) | | | | |
| | | | | | | | | | | | | | | | | | | 4 | | | Modbus communication (RS-485) and HART communication (Hybrid Bell 202) | | | | |
| Explosion-proof rating | | | | | | | | | | | | | | | | | | | | 2 | ATEX, IECEx | | | | |
| | | | | | | | | | | | | | | | | | | | | 4 | CSA | | | | |
| Explosion-proof temperature class (1) | | | | | | | | | | | | | | | | | | | | 1 | Sensor: T1 (separate transmitter only, high-temperature models CC025 through CC150 only) | | | | |
| | | | | | | | | | | | | | | | | | | | | 2 | Sensor: T2 (separate transmitter only, models CC003 through CC250 only) | | | | |
| | | | | | | | | | | | | | | | | | | | | 3 | Sensor: T3 (separate transmitter only, Models CC00A through CC080) | | | | |
| | | | | | | | | | | | | | | | | | | | | 4 | Sensor: T4 (integral transmitter, not available for models CC006 through CC080) | | | | |
| | | | | | | | | | | | | | | | | | | | | 5 | Sensor: T5 (separate transmitter only, low-temperature models CC025 through CC250 only) | | | | |

- Explosion-proof specification has restrictions on temperature class. Refer to Explosion-proof Specifications, page 22 and page A-22 for details.
- ASME class 600 is not available on models CC20H or CC250.
- If fluid temperature exceeds 176°F (80°C), a separately-mounted transmitter must be selected. Sensor-to-transmitter cable is ordered separately – see page B-3.
- 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.
- "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 (Transmitter)

| Transmitter Product Code | | | | | | |
|--------------------------|------|---|---|---|---|----------------------|
| Item | 1 | 2 | 3 | 4 | 5 | 6 |
| Model | PA0K | | | | | Transmitter |
| Mounting | | | | | | Integral |
| | | 2 | | | | Separate |
| Input power | | | 1 | | | 20 to 30 VDC |
| | | | 2 | | | 100 to 240 VAC |
| Pulse output | | | | 1 | | Open Collector Pulse |
| | | | | 2 | | Voltage Pulse |
| Communication interface | | | | | 1 | HART |
| | | | | | 2 | HART/Modbus |
| Hazardous location | | | | | | 2 CSA |
| | | | | | | 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*

Minimum meter length: 10 meters Available in 5 meter increments thereafter; maximum 200m.

* 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 (1) | Name | Density | | Viscosity |
| 3. Flow range | Max | Norm | Min | Minimum Unit (lbm/hr, bbl/hr, etc.) |
| 4. Fluid temperature | Max | Norm | Min | Unit (°F or °C) |
| 5. Operating pressure | Max | Norm | Min | Unit (psi, barg, kPa, kg/cm2) |
| 6. Ambient temperature | Max | Norm | Min | Unit (°F or °C) |
| 7. Fluid flow direction | <input type="checkbox"/> Left to right | <input type="checkbox"/> Right to left | <input type="checkbox"/> Top to Bottom | <input type="checkbox"/> Bottom to top (Orientation: see page 21) |
| 8. Nominal size | in. or | | mm | |
| 9. Required accuracy | + | % of reading | + | % of full scale |
| 10. Process connection | <input type="checkbox"/> Flange type/rating | | <input type="checkbox"/> Threaded | <input type="checkbox"/> Ferrule |
| 11. Explosion-proof | <input type="checkbox"/> CSA | <input type="checkbox"/> ATEX (pending) | <input type="checkbox"/> IECEx (pending) | <input type="checkbox"/> Not required |
| 12. Power supply | <input type="checkbox"/> AC | <input type="checkbox"/> DC | <input type="checkbox"/> Volts | |
| 13. Output specifications | Pulse output | Output Form: | <input type="checkbox"/> Active voltage | <input type="checkbox"/> Open collector |
| | | Output 1: | <input type="checkbox"/> Mass rate | <input type="checkbox"/> Volume rate |
| | | Output 2: | <input type="checkbox"/> Mass rate | <input type="checkbox"/> Volume rate |
| | | Output 1: | Pulses per | |
| | | Output 2: | Pulses per | |
| | Analog output | Output 1: | <input type="checkbox"/> Mass rate | <input type="checkbox"/> Volume rate |
| | | Output 2: | <input type="checkbox"/> Mass rate | <input type="checkbox"/> Volume rate |
| | | Output 1: | 4MADC = | 20MADC = |
| | | Output 2: | 4MADC = | 20MADC = |
| | Flow damping | Seconds (selectable from 0 to 200 seconds; default is 0.8 seconds) | | |
| | Alarm output | Low = | (g/ml, SG, lbm/ft3, etc.) Default is 0.3 g/ml. | |
| | | High = | (g/ml, SG, lbm/ft3, etc.) Default is 2.0 g/ml. | |
| 14. Communication protocol | <input type="checkbox"/> HART | <input type="checkbox"/> Modbus (Slave Address:) | | |
| 15. Transmission length | Distance from sensor to transmitter (if remote mounted) | | | Unit (ft, m) |
| | Distance from transmitter to receiving device | | | Unit (ft, m) |
| 16. Receiving device | <input type="checkbox"/> Totalizer | <input type="checkbox"/> Indicator | <input type="checkbox"/> Recorder | <input type="checkbox"/> Flow controller |
| | <input type="checkbox"/> Batch controller | <input type="checkbox"/> Density computer | <input type="checkbox"/> Computer | <input type="checkbox"/> Other |
| 17. Interconnect cable length | For separately-mounted transmitter: CBP2- | | | m (Minimum: 10 m; Maximum 200 m) |
| 18. Remote mount bracket | <input type="checkbox"/> Remote mount bracket for wall mount or 2" pipe mount (for remote mount transmitters only) | | | |
| 19. Number of units required | | | | |
| 20. Application | | | | |
| 21. Other considerations | | | | |

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