

Flow Measurement

SITRANS FC (Coriolis)

Sensors / SITRANS FCS700

Overview

SITRANS FCS700 sensor is the grande Coriolis flow sensor for large pipes and high flows.

Features:

- Dual curved AISI 316L stainless steel or alloy 22 tubes with optimum decoupling from external influences
- Nominal sizes: DN 100 to DN 200
- Process connection: flanges
- Energy efficient low pressure loss design with short tube paths and large tube diameter
- High power tube driver for dependable measurements in high damping applications
- Combination with compact or remote transmitters



FCS700 sensor

Design

Sensor installation position related to type of fluid

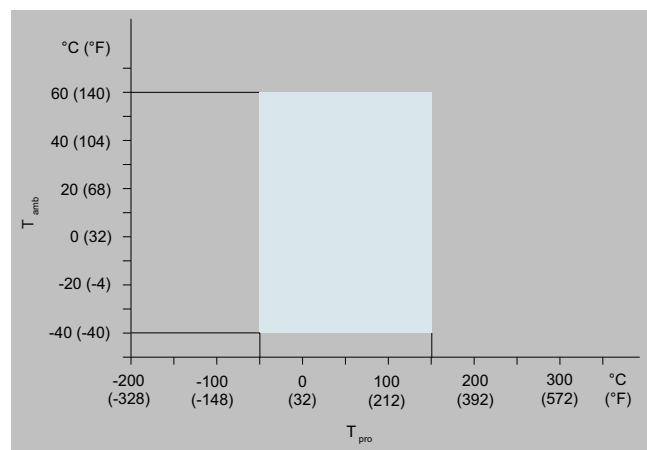
Installation position	Fluid	Description
Position 1 	Liquid	• Horizontal • Measuring tubes below process pipe • Avoids accumulation of entrained gas
Position 2 	Gas	• Horizontal • Measuring tubes above process pipe • Accumulation of liquid or condensate is less likely
Position 3 	Gas / liquid	• Vertical • Upwards direction of flow • In liquid application accumulation of entrained gas is avoided • This position allows self-draining in liquid flow

Technical specifications

Allowed ambient temperature for FCS700 sensors

The allowed combinations of process fluid and ambient temperature for the sensor are illustrated as light areas in the diagrams below.

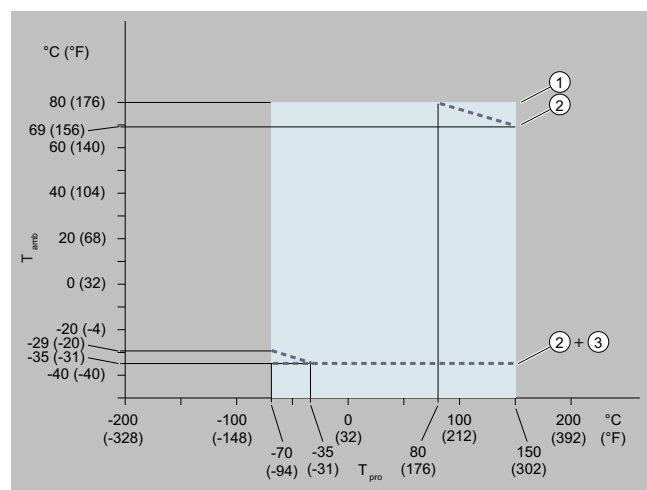
Standard temperature specification, compact transmitter



Allowed process fluid and ambient temperatures, compact transmitter

T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

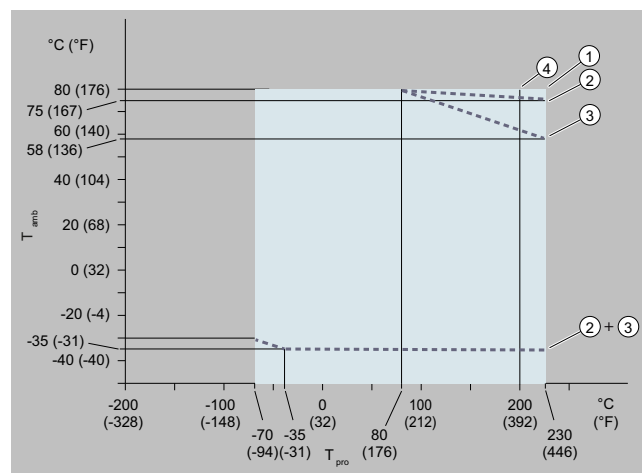
Standard temperature specification, remote transmitter



Allowed process fluid and ambient temperatures, remote transmitter

1	Standard cable option
2	Fire retardant cable standard neck or long neck with insulation and heating options
3	Fire retardant cable long neck without insulation and heating options
T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

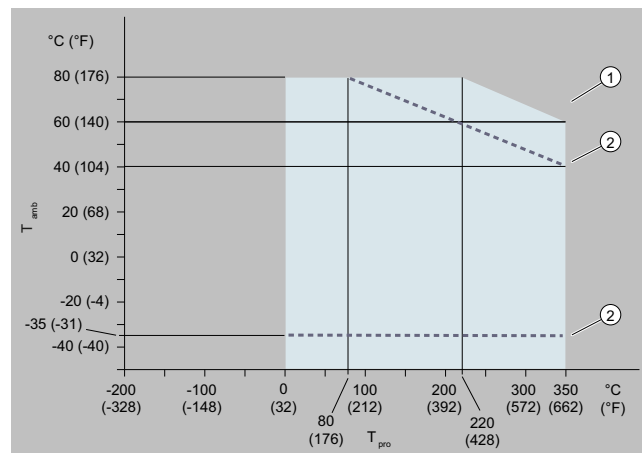
Medium temperature specification, remote transmitter



Allowed process fluid and ambient temperatures, compact transmitter

1	Standard cable option
2	Fire retardant cable without insulation and heating options
3	Fire retardant cable with insulation and heating options
4	For FCS700 DN 200 medium temperature range is limited to 200 °C (392 °F)
T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

High temperature specification, remote transmitter



Allowed process fluid and ambient temperatures, remote transmitter

1	Standard cable option
2	Fire retardant cable option
T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

Mechanical specifications of FCS700 sensors

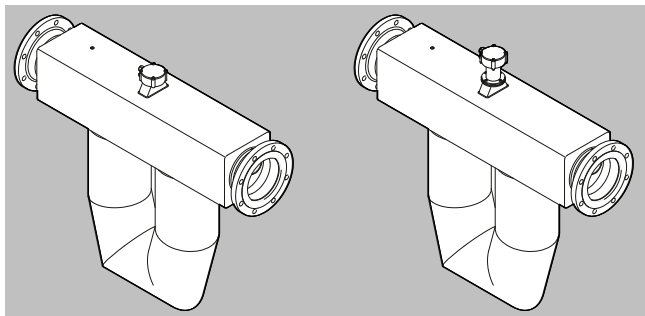
FCS700 sensors are available in standard neck and long neck designs and can be combined with compact or remote transmitters. The neck can also be described as the pedestal connecting the sensor body to the transmitter or terminal housing.

Flow Measurement

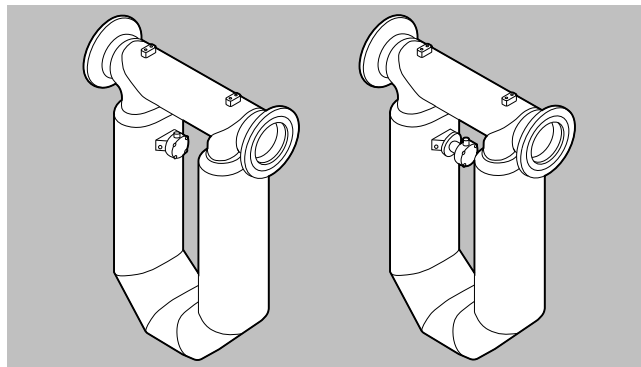
SITRANS FC (Coriolis)

Sensors / SITRANS FCS700

Technical specifications (continued)



FCS700 sensors DN 100 and DN 150 (for remote transmitter) with standard neck, and long neck version shown to the right



FCS700 sensors DN 200 (for remote transmitter) with standard neck, and long neck version shown to the right

Material specifications

Wetted parts ¹⁾		
Sensor size DN 100	AISI 316L stainless steel or alloy 22	
Sensor size DN 150	AISI 316L stainless steel or alloy 22	
Sensor size DN 200	AISI 316L stainless steel with ASTM A351 CF3M stainless steel flow separator	
Sensor housing		
Junction box	AISI 316L stainless steel	All sensors with remote transmitters
Neck (pedestal)	AISI 316L stainless steel	All versions
Body (outer casing)	AISI 304 stainless steel	Versions with housing code B01
Body (outer casing)	AISI 316L stainless steel	Versions with housing codes B02, B03 and B04
Nameplates ²⁾		
	Process temperature range	Material
Sensor with AISI 304 stainless steel housing	Standard, up to 150 °C (302 °F)	Polyester film
Sensor with AISI 304 stainless steel housing	Medium or high	AISI 316L ss
Sensor with AISI 316L stainless steel housing	All versions	AISI 316L ss

¹⁾ The user is responsible to ensure chemical compatibility of the material of the wetted parts with the measured process fluid.

²⁾ Nameplate material depends on the materials selected for SITRANS FC sensors.

Secondary containment

Some applications or environment conditions require secondary containment retaining the process pressure for increased safety. SITRANS FCS700 sensors have a secondary containment filled with inert gas.

Typical burst pressure at room temperature for size DN 100	65 bar (942 psi)
Typical burst pressure at room temperature for size DN 150	50 bar (725 psi)
Typical burst pressure at room temperature for size DN 200	30 bar (435 psi)

Insulation and heat tracing (not available for sizes DN 150 and DN 200)

In cases where fluid temperature deviates more than 80 °C (176 °F) from ambient temperature, sensor insulation is recommended to avoid negative effects from temperature fluctuations.

Maximum temperature of heat carrier

Process temperature range	Temperature range of heat carrier
Standard, up to 150 °C (302 °F)	0 ... 150 °C (32 ... 302 °F)
Medium, up to 260 °C (500 °F)	0 ... 230 °C (32 ... 446 °F) ¹⁾
High, up to 350 °C (662 °F)	0 ... 350 °C (32 ... 662 °F)

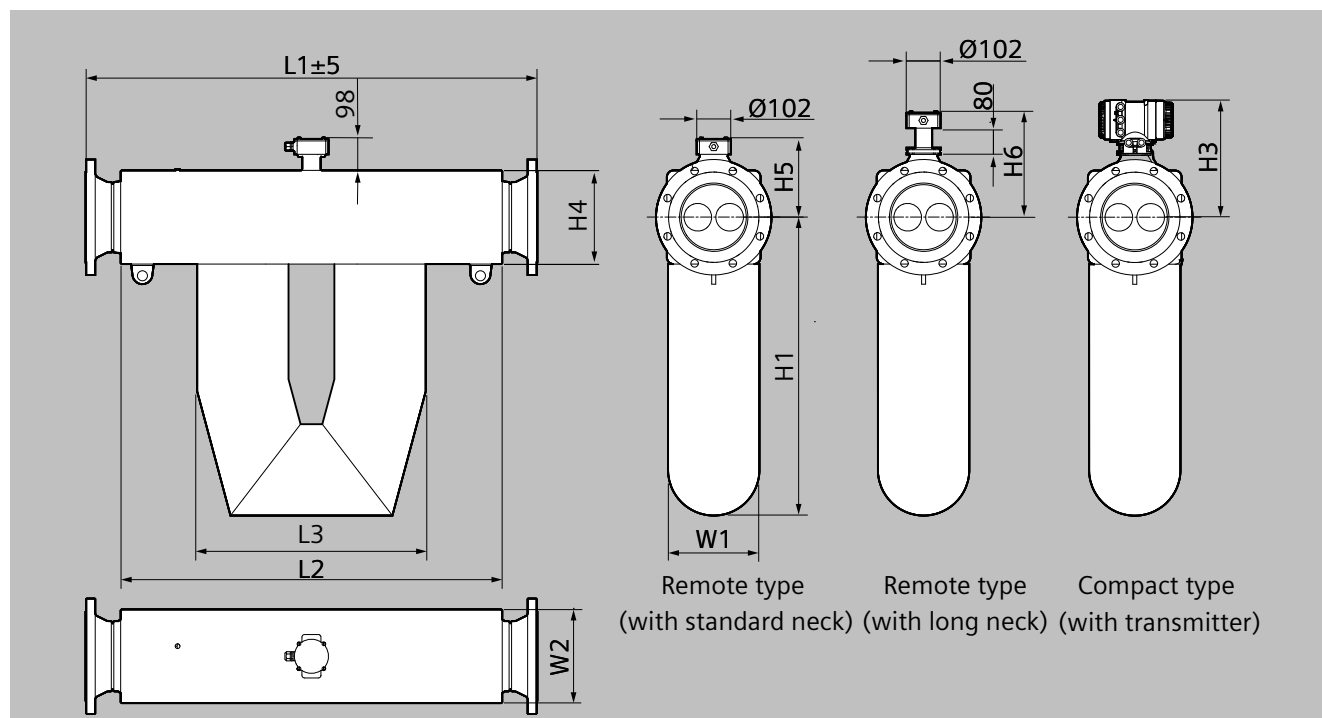
¹⁾ With Ex Approval 0 ... 220 °C (32 ... 428 °F)

Insulation and heat tracing may be installed by the user but not in hazardous areas, and the following must be noted:

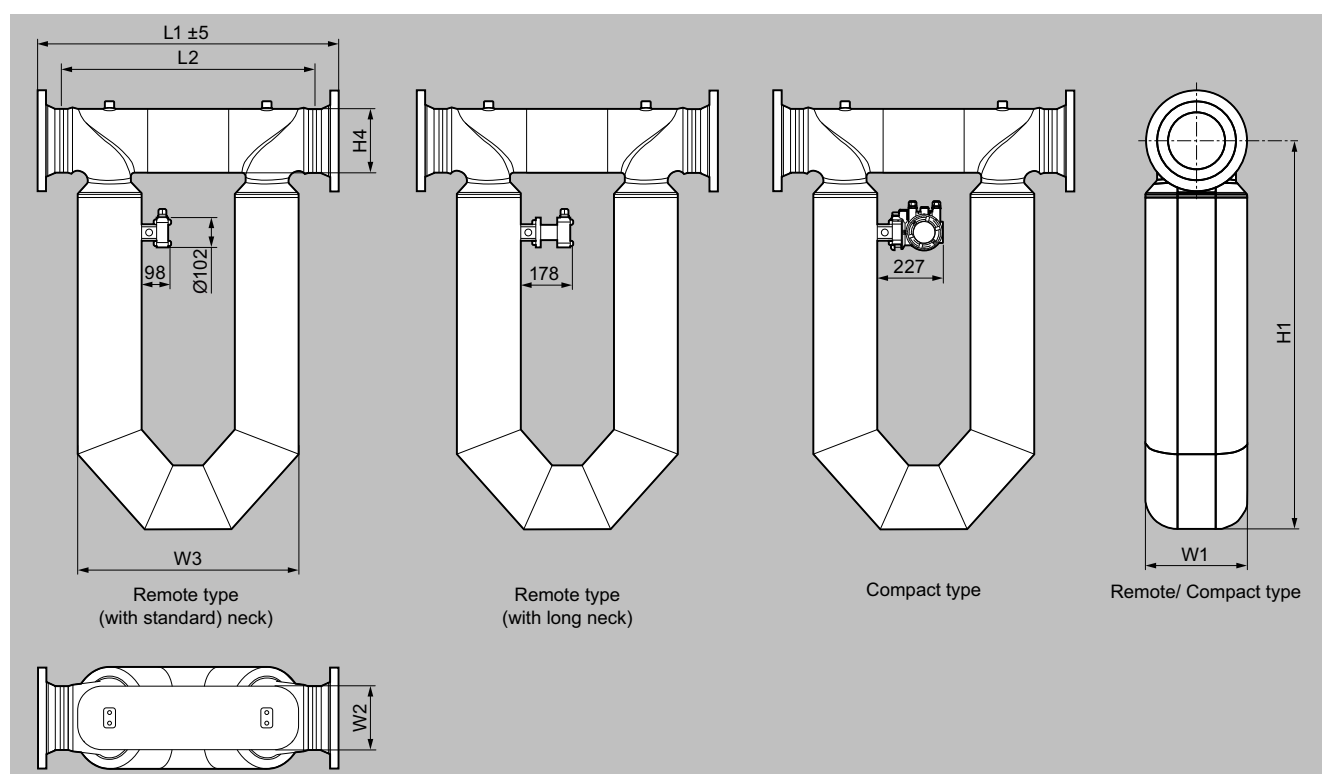
- Do not insulate sensor terminal box.
- Do not expose transmitters to ambient temperatures exceeding 60 °C (140 °F).
- The preferred insulation is 60 mm (2.36") thick with a heat transfer coefficient of 0.4 W/m² K (0.07 Btu/ ft² °F).

Dimensional drawings

Drawings, dimensions and weight for FCS700 sensors



Dimensions in mm, sizes DN 100 and DN 150



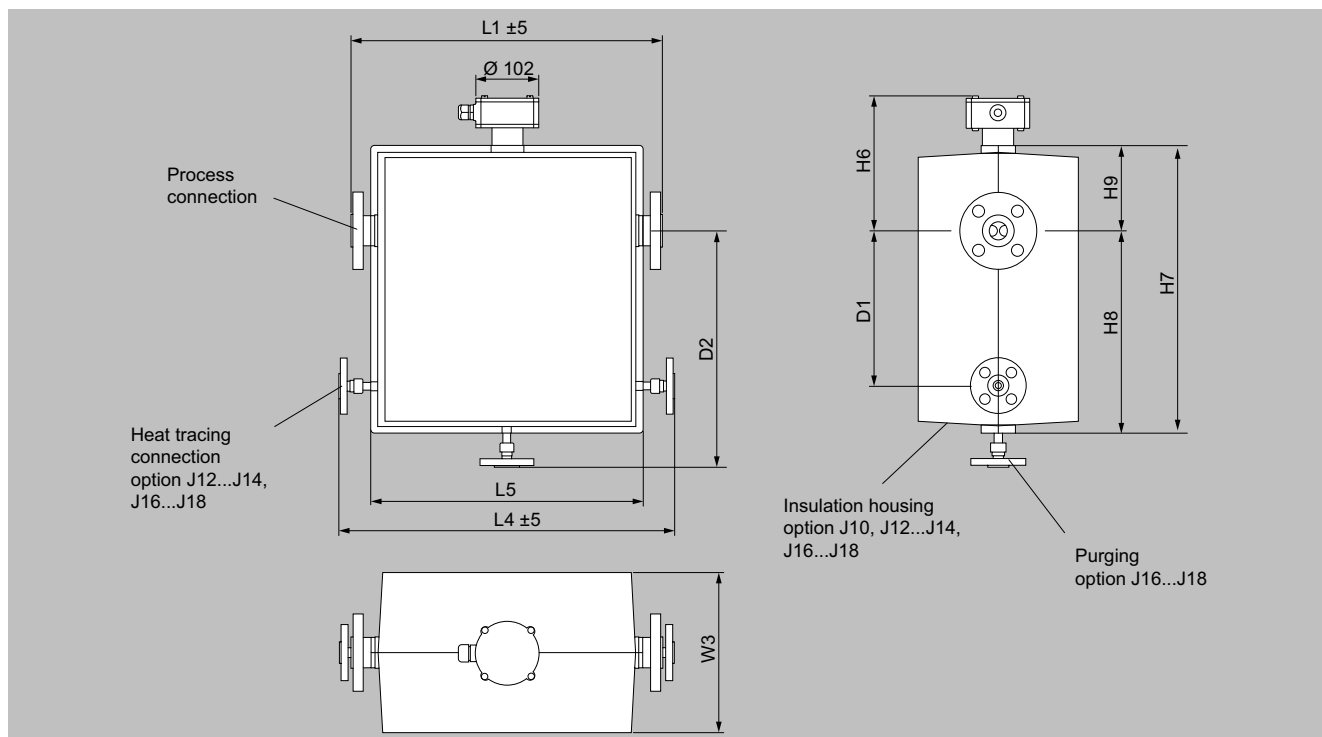
Dimensions in mm, sizes DN 200

Flow Measurement

SITRANS FC (Coriolis)

Sensors / SITRANS FCS700

Dimensional drawings (continued)



Dimensions in mm (with insulation and heating options)

FCS700 sensor dimensions without L1

Nominal size	L2	L3	L4	L5	W1	W2	W3	D1	D2
Dimensions in mm (inch)									
DN 100	892 (35.1)	691 (27.2)	1050 (41.3)	944 (37.2)	168 (6.6)	176 (6.9)	342 (13.5)	350 (13.8)	677 (26.7)
DN 150	1 140 (44.9)	683 (26.9)	n/a	n/a	273 (10.7)	280 (11)	n/a	n/a	n/a
DN 200	870 (34.3)	759 (29.9)	n/a	n/a	350 (13.8)	350 (13.8)	n/a	n/a	n/a

Nominal size	H1	H3	H4	H5	H6	H7	H8	H9
Dimensions in mm (inch)								
DN 100	556 (21.9)	315 (12.4)	176 (6.9)	186 (7.3)	266 (10.5)	824 (32.4)	628 (24.7)	196 (7.7)
DN 150	891 (35.1)	367 (14.5)	280 (11)	238 (9.4)	320 (12.6)	n/a	n/a	n/a
DN 200	1 335 (52.6)	n/a	219 (8.6)	n/a	n/a	n/a	n/a	n/a

Overall length L1 and weight

The overall length of the sensor depends on the selected process connection (type and size). The following tables list the overall length and weight as functions of the individual process connection.

The weights in the tables are for the remote type. Additional weight for the compact type: up to 3.2 kg (7.1 lb).

L1 dimension and weight with process connections according to ASME B16.5, AISI 316L wetted parts

Process connection size and type	FCS700 sensor nominal size DN 100		DN 150		DN 200	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
ASME 4" class 150, raised face (RF)	1 100 (43.3)	95 (210)	n/a	n/a	n/a	n/a
ASME 4" class 300, raised face (RF)	1 100 (43.3)	103 (227)	n/a	n/a	n/a	n/a
ASME 4" class 600, raised face (RF)	1 100 (43.3)	112 (246)	n/a	n/a	n/a	n/a

Dimensional drawings (continued)

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100		DN 150		DN 200	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
ASME 4" class 600, ring joint (RJ)	1 100 (43.3)	112 (246)	n/a	n/a	n/a	n/a
ASME 5" class 150, raised face (RF)	1 100 (43.3)	97 (214)	n/a	n/a	n/a	n/a
ASME 5" class 300, raised face (RF)	1 100 (43.3)	109 (239)	n/a	n/a	n/a	n/a
ASME 5" class 600, raised face (RF)	1 160 (45.7)	136 (299)	n/a	n/a	n/a	n/a
ASME 5" class 600, ring joint (RJ)	1 160 (45.7)	136 (299)	n/a	n/a	n/a	n/a
ASME 6" class 150, raised face (RF)	1 100 (43.3)	101 (223)	1 350 (53.1)	290 (639)	n/a	n/a
ASME 6" class 300, raised face (RF)	1 100 (43.3)	118 (259)	1 350 (53.1)	307 (677)	n/a	n/a
ASME 6" class 600, raised face (RF)	1 200 (47.2)	149 (329)	1 390 (54.7)	332 (732)	n/a	n/a
ASME 6" class 600, ring joint (RJ)	1 200 (47.2)	150 (331)	1 390 (54.7)	333 (733)	n/a	n/a
ASME 8" class 150, raised face (RF)	n/a	n/a	1 350 (53.1)	302 (666)	1 030 (40.6)	299 (659)
ASME 8" class 300, raised face (RF)	n/a	n/a	1 350 (53.1)	324 (714)	1 050 (41.3)	323 (712)
ASME 8" class 600, raised face (RF)	n/a	n/a	1 440 (56.7)	371 (818)	1 120 (44.1)	368 (811)
ASME 8" class 600, ring joint (RJ)	n/a	n/a	1 440 (56.7)	372 (821)	1 120 (44.1)	369 (814)
ASME 10" class 150, raised face (RF)	n/a	n/a	n/a	n/a	1 090 (42.9)	318 (701)
ASME 10" class 300, raised face (RF)	n/a	n/a	n/a	n/a	1 140 (44.9)	363 (800)
ASME 10" class 600, raised face (RF)	n/a	n/a	n/a	n/a	1 220 (48)	451 (994)
ASME 10" class 600, ring joint (RJ)	n/a	n/a	n/a	n/a	1 220 (48)	453 (999)

L1 dimension and weight with process connections according to ASME B16.5, alloy 22 wetted parts

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100		DN 150		DN 200	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
ASME 5" class 150, raised face (RF)	1 100 (43.3)	99 (219)	n/a	n/a	n/a	n/a
ASME 5" class 300, raised face (RF)	1 100 (43.3)	111 (245)	n/a	n/a	n/a	n/a
ASME 5" class 600, raised face (RF)	1 110 (43.7)	133 (293)	n/a	n/a	n/a	n/a
ASME 6" class 150, raised face (RF)	1 100 (43.3)	106 (235)	n/a	n/a	n/a	n/a
ASME 6" class 300, raised face (RF)	1 100 (43.3)	123 (270)	n/a	n/a	n/a	n/a

L1 dimension and weight with process connections according to EN 1092-1, AISI 316L wetted parts

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100		DN 150		DN 200	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 100 PN 16 type B1, raised face (RF)	1 100 (43.3)	92 (202)	n/a	n/a	n/a	n/a
EN DN 100 PN 16 type D, with groove	1 100 (43.3)	91 (201)	n/a	n/a	n/a	n/a
EN DN 100 PN 16 type E, with spigot	1 100 (43.3)	91 (201)	n/a	n/a	n/a	n/a

Flow Measurement

SITRANS FC (Coriolis)

Sensors / SITRANS FCS700

Dimensional drawings (continued)

Process connection size and type	FCS700 sensor nominal size DN 100		DN 150		DN 200	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 100 PN 16 type F, with recess	1 100 (43.3)	91 (201)	n/a	n/a	n/a	n/a
EN DN 100 PN 40 type B1, raised face (RF)	1 100 (43.3)	95 (210)	n/a	n/a	n/a	n/a
EN DN 100 PN 40 type D, with groove	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 100 PN 40 type E, with spigot	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 100 PN 40 type F, with recess	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 100 PN 63 type B1, raised face (RF)	1 100 (43.3)	100 (220)	n/a	n/a	n/a	n/a
EN DN 100 PN 63 type D, with groove	1 100 (43.3)	99 (219)	n/a	n/a	n/a	n/a
EN DN 100 PN 63 type E, with spigot	1 100 (43.3)	98 (217)	n/a	n/a	n/a	n/a
EN DN 100 PN 63 type F, with recess	1 100 (43.3)	99 (219)	n/a	n/a	n/a	n/a
EN DN 100 PN 100 type B1, raised face (RF)	1 100 (43.3)	106 (233)	n/a	n/a	n/a	n/a
EN DN 100 PN 100 type D, with groove	1 100 (43.3)	105 (232)	n/a	n/a	n/a	n/a
EN DN 100 PN 100 type E, with spigot	1 100 (43.3)	104 (230)	n/a	n/a	n/a	n/a
EN DN 100 PN 100 type F, with recess	1 100 (43.3)	105 (232)	n/a	n/a	n/a	n/a
EN DN 125 PN 16 type B1, raised face (RF)	1 100 (43.3)	95 (209)	n/a	n/a	n/a	n/a
EN DN 125 PN 16 type D, with groove	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 125 PN 16 type E, with spigot	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 125 PN 16 type F, with recess	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
EN DN 125 PN 40 type B1, raised face (RF)	1 100 (43.3)	99 (218)	n/a	n/a	n/a	n/a
EN DN 125 PN 40 type D, with groove	1 100 (43.3)	99 (218)	n/a	n/a	n/a	n/a
EN DN 125 PN 40 type E, with spigot	1 100 (43.3)	98 (216)	n/a	n/a	n/a	n/a
EN DN 125 PN 40 type F, with recess	1 100 (43.3)	98 (216)	n/a	n/a	n/a	n/a
EN DN 125 PN 63 type B1, raised face (RF)	1 100 (43.3)	109 (240)	n/a	n/a	n/a	n/a
EN DN 125 PN 63 type D, with groove	1 100 (43.3)	108 (239)	n/a	n/a	n/a	n/a
EN DN 125 PN 63 type E, with spigot	1 100 (43.3)	107 (237)	n/a	n/a	n/a	n/a
EN DN 125 PN 63 type F, with recess	1 100 (43.3)	108 (239)	n/a	n/a	n/a	n/a
EN DN 125 PN 100 type B1, raised face (RF)	1 140 (44.9)	121 (267)	n/a	n/a	n/a	n/a
EN DN 125 PN 100 type D, with groove	1 140 (44.9)	121 (267)	n/a	n/a	n/a	n/a

Dimensional drawings (continued)

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100					
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 125 PN 100 type E, with spigot	1 140 (44.9)	119 (263)	n/a	n/a	n/a	n/a
EN DN 125 PN 100 type F, with recess	1 140 (44.9)	120 (265)	n/a	n/a	n/a	n/a
EN DN 150 PN 16 type B1, raised face (RF)	1 100 (43.3)	98 (216)	1 350 (53.1)	288 (634)	n/a	n/a
EN DN 150 PN 16 type D, with groove	1 100 (43.3)	98 (216)	1 350 (53.1)	287 (632)	n/a	n/a
EN DN 150 PN 16 type E, with spigot	1 100 (43.3)	97 (214)	1 350 (53.1)	286 (631)	n/a	n/a
EN DN 150 PN 16 type F, with recess	1 100 (43.3)	97 (214)	1 350 (53.1)	287 (632)	n/a	n/a
EN DN 150 PN 40 type B1, raised face (RF)	1 100 (43.3)	105 (231)	1 350 (53.1)	294 (648)	n/a	n/a
EN DN 150 PN 40 type D, with groove	1 100 (43.3)	104 (230)	1 350 (53.1)	293 (647)	n/a	n/a
EN DN 150 PN 40 type E, with spigot	1 100 (43.3)	103 (228)	1 350 (53.1)	293 (647)	n/a	n/a
EN DN 150 PN 40 type F, with recess	1 100 (43.3)	104 (230)	1 350 (53.1)	293 (647)	n/a	n/a
EN DN 150 PN 63 type B1, raised face (RF)	1 140 (44.9)	124 (274)	1 350 (53.1)	311 (685)	n/a	n/a
EN DN 150 PN 63 type D, with groove	1 140 (44.9)	124 (274)	1 350 (53.1)	310 (684)	n/a	n/a
EN DN 150 PN 63 type E, with spigot	1 140 (44.9)	122 (269)	1 350 (53.1)	309 (681)	n/a	n/a
EN DN 150 PN 63 type F, with recess	1 140 (44.9)	123 (272)	1 350 (53.1)	310 (684)	n/a	n/a
EN DN 150 PN 100 type B1, raised face (RF)	1 180 (46.5)	138 (303)	n/a	n/a	n/a	n/a
EN DN 150 PN 100 type D, with groove	1 180 (46.5)	137 (302)	n/a	n/a	n/a	n/a
EN DN 150 PN 100 type E, with spigot	1 180 (46.5)	136 (299)	n/a	n/a	n/a	n/a
EN DN 150 PN 100 type F, with recess	1 180 (46.5)	137 (301)	n/a	n/a	n/a	n/a
EN DN 200 PN 16 type B1, raised face (RF)	n/a	n/a	1 350 (53.1)	294 (649)	1 010 (39.8)	290 (639)
EN DN 200 PN 16 type D, with groove	n/a	n/a	1 350 (53.1)	294 (649)	n/a	n/a
EN DN 200 PN 16 type E, with spigot	n/a	n/a	1 350 (53.1)	293 (646)	n/a	n/a
EN DN 200 PN 16 type F, with recess	n/a	n/a	1 350 (53.1)	293 (646)	n/a	n/a
EN DN 200 PN 40 type B1, raised face (RF)	n/a	n/a	1 350 (53.1)	311 (685)	1 030 (40.6)	308 (679)
EN DN 200 PN 40 type D, with groove	n/a	n/a	1 350 (53.1)	310 (683)	n/a	n/a
EN DN 200 PN 40 type E, with spigot	n/a	n/a	1 350 (53.1)	308 (680)	n/a	n/a
EN DN 200 PN 40 type F, with recess	n/a	n/a	1 350 (53.1)	309 (682)	n/a	n/a
EN DN 200 PN 63 type B1, raised face (RF)	n/a	n/a	1 350 (53.1)	333 (733)	1 060 (41.7)	332 (732)

Flow Measurement

SITRANS FC (Coriolis)

Sensors / SITRANS FCS700

Dimensional drawings (continued)

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100					
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 200 PN 63 type D, with groove	n/a	n/a	1 350 (53.1)	332 (732)	n/a	n/a
EN DN 200 PN 63 type E, with spigot	n/a	n/a	1 350 (53.1)	330 (728)	n/a	n/a
EN DN 200 PN 63 type F, with recess	n/a	n/a	1 350 (53.1)	331 (730)	n/a	n/a
EN DN 200 PN 100 type B1, raised face (RF)	n/a	n/a	n/a	n/a	1 100 (43.3)	362 (798)
EN DN 250 PN 16 type B1, raised face (RF)	n/a	n/a	n/a	n/a	1 080 (42.5)	306 (675)
EN DN 250 PN 40 type B1, raised face (RF)	n/a	n/a	n/a	n/a	1 130 (44.5)	343 (756)
EN DN 250 PN 63 type B1, raised face (RF)	n/a	n/a	n/a	n/a	1 150 (45.3)	370 (816)
EN DN 250 PN 100 type B1, raised face (RF)	n/a	n/a	n/a	n/a	1 150 (45.3)	433 (955)

L1 dimension and weight with process connections according to EN 1092-1, alloy 22 wetted parts

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100					
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 125 PN 16, type B1, raised face (RF)	1 100 (43.3)	96 (212)	n/a	n/a	n/a	n/a
EN DN 125 PN 40, type B1, raised face (RF)	1 100 (43.3)	101 (222)	n/a	n/a	n/a	n/a
EN DN 150 PN 16, type B1, raised face (RF)	1 100 (43.3)	103 (227)	n/a	n/a	n/a	n/a
EN DN 150 PN 40, type B1, raised face (RF)	1 100 (43.3)	110 (241)	n/a	n/a	n/a	n/a

L1 dimension and weight with process connections according to JIS B 2220, AISI 316L wetted parts

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100					
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
JIS DN 100 10 K	1 100 (43.3)	91 (200)	n/a	n/a	n/a	n/a
JIS DN 100 20 K	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
JIS DN 125 10 K	1 100 (43.3)	94 (208)	n/a	n/a	n/a	n/a
JIS DN 125 20 K	1 100 (43.3)	101 (222)	n/a	n/a	n/a	n/a

L1 dimension and weight with process connections according to JIS B 2220, alloy 22 wetted parts

Process connection size and type	FCS700 sensor nominal size		DN 150		DN 200	
	DN 100					
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
JIS DN 125 10 K	1 100 (43.3)	97 (213)	n/a	n/a	n/a	n/a
JIS DN 125 20 K	1 100 (43.3)	103 (228)	n/a	n/a	n/a	n/a