Honeywell

SCM 3000 *PLUS*
Smart Coriolis Mass Flowmeter
Specification and Application Data

34-CM-29-02

Rev. 2.1
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TotalPlant

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About This Document

Abstract

This document is intended to provide descriptions, specifications and applications for the SCM 3000 Smart Coriolis Mass Flowmeter.

References

Honeywell Documents

The following list identifies all Honeywell documents that may be sources of reference for the material discussed in this publication.

Document Title	ID #	Binder Title	Binder ID #
SCM 3000 ***PLUS*** Smart Coriolis Mass Flowmeter User Manual	34-CM-25-02		

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Introduction

Honeywell's Smart Coriolis Mass Flowmeter SCM 3000 ***PLUS*** measures the mass and volume flow of fluids of widely differing characteristics:

- Chocolate, condensed milk, syrup
- Oils, fats
- Acids, alkalis
- Varnishes, paints
- Suspensions
- Pharmaceuticals
- Catalytic converters, inhibitors
- Gases and gas mixtures

The system also measures the density and temperature of fluids in order to calculate other parameters such as volumetric flow, solids content or density units (standard density, °Brix, °Baumé, °API).

The SCM 3000 ***PLUS*** microprocessor-based electronics couple reliable and accurate measurements with a versatile communications capability for enhanced process monitoring.

The SCM 3000 ***PLUS*** is used in applications wherever mass flow measurement is of critical importance:

- Mixing and batching of various raw materials
- Controlling processes
- Measuring of quickly changing densities
- Control and monitoring of product quality.

The advantages of this measurement process are demonstrated by its successful use in food processing, the pharmaceutical industry, the chemical and petrochemical industries, waste disposal, energy production, gas applications.

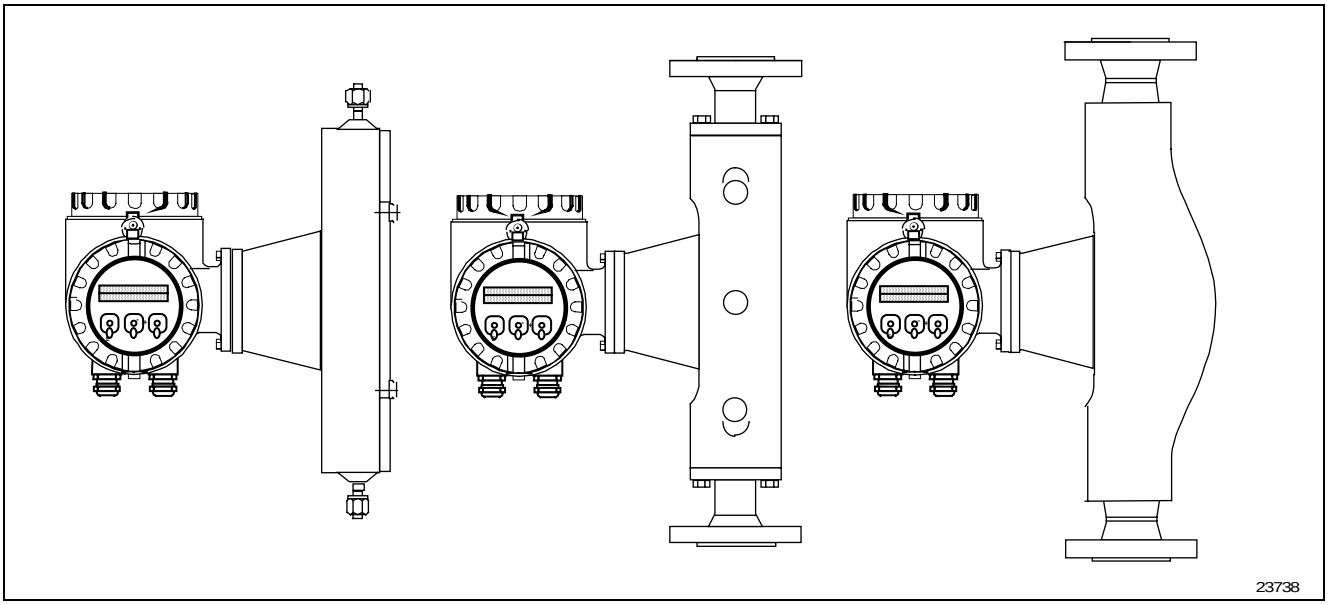


Figure 1 SCM 3000 *PLUS* Coriolis Mass Flowmeter System

Features

Flexible System

- The system can be customized to each application
- Wide choice of materials for process connections and measuring pipes, compatible to the medium
- Simple and cost effective installation
- Transmitter housing can be rotated to fit the orientation.

Safe Operation

- Self-draining measuring pipes
- Secondary containment vessel as standard
- High electromagnetic compatibility (EMC)
- Self-monitoring with alarm function
- EEPROM stores data on power failure (no batteries required)
- ISO 9001 manufacturer, quality assured.

Accurate Measurement

- Measurement accuracy:

Liquids: Mass flow ±0.1%
Volume flow ±0.15%
Gases: Mass flow ±0.5%

- 1000:1 operable flow range
- Excellent repeatability.

Easy to Operate

- Menu-driven dialog for all parameters
- Two-line illuminated display
- Touch Control: operation without special equipment (safety protection not violated).

Install Anywhere

- Compact design
- Insensitive to plant vibration
- Rugged and shock-proof surfaces resistant to acids and alkalis
- NEMA 4X and IP 67 protection for compact and remote versions
- Measurement independent of fluid characteristics
- High performance: measurement of more than one process variable simultaneously, special density evaluation functions, etc.

Components

The measuring system consists of:

- SCM 3000 ***PLUS*** transmitter
- SCM 3000 ***PLUS*** A, M, or F Series sensor (see Figure 2)

The SCM 3000 ***PLUS*** measuring system is mechanically and electronically designed for maximum flexibility with the transmitters and sensors being combined in any variation. The wide range of materials and process connections (fittings; flanges DIN, ANSI, JIS; Tri-Clamp) ensure that the measuring point can adjust to both plant and process conditions. The transmitter housing can be rotated for ease of reading and operation in any orientation.

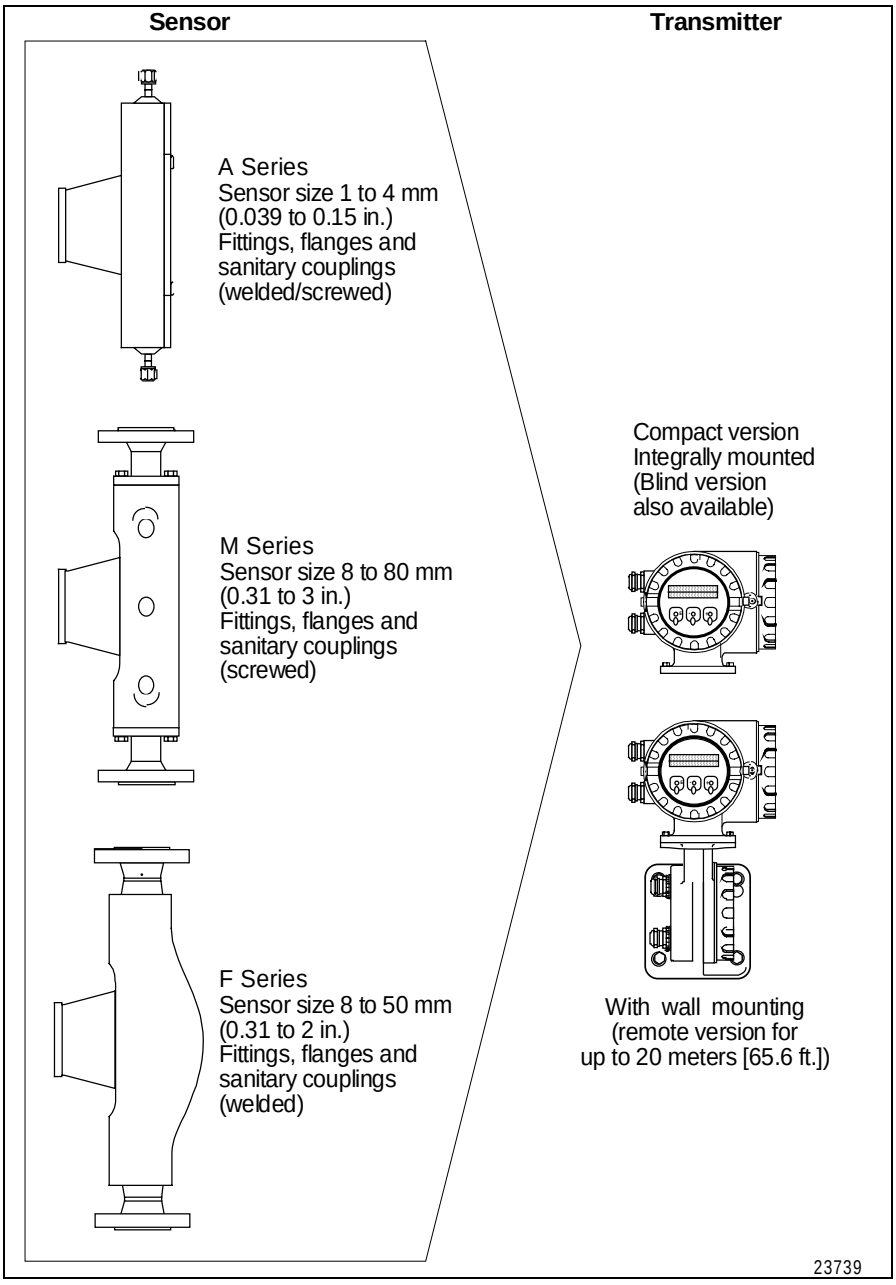


Figure 2 SCM 3000 *PLUS* Measuring System

Principle of Operation

The measuring principle is based on the controlled generation of Coriolis forces. These forces are always present when both translational (straight line) and rotational (revolving) movement occur simultaneously.

The amplitude of the Coriolis force depends on the moving mass, its velocity in the system and therefore its mass flow.

The SCM 3000 ***PLUS*** uses an oscillation and two parallel measuring pipes, so that with fluid flowing through the pipes they are made to oscillate in antiphase, so that they act like a tuning fork.

Note: Unlike M and F Series, the A Series only has a single measuring pipe. However, the measuring principle and function of all sensors are identical.

The Coriolis forces produced at the measuring pipes cause a phase shift in the pipe oscillation under the following conditions (see Figure 3).

- When there is zero flow, i.e. with the fluid standing still, both pipes oscillate in phase (1, Zero flow).
- When there is mass flow, the pipe oscillation decelerated at the inlet (2) and accelerated at the outlet (3).

As the mass flowrate increases, the phase difference also increases (A-B). The oscillations of the measuring pipes are determined using electrodynamic sensors at the inlet and outlet.

The coriolis force based measurement principle operates independent of:

- temperature
- pressure
- viscosity
- conductivity
- flow profile.

Density Measurement

The measuring pipes are continuously excited at their resonant frequency. As the mass and therefore the density of the oscillating system changes (measuring pipes and fluid), the vibrating frequency is thus readjusted. The resonant frequency is a function of the density of the fluid and, because of this, a density signal can be obtained.

Temperature Measurement

The temperature of the measuring pipes is determined in order to calculate the compensation factor due to temperature effects. This signal corresponds to the product temperature and is also available as an output.

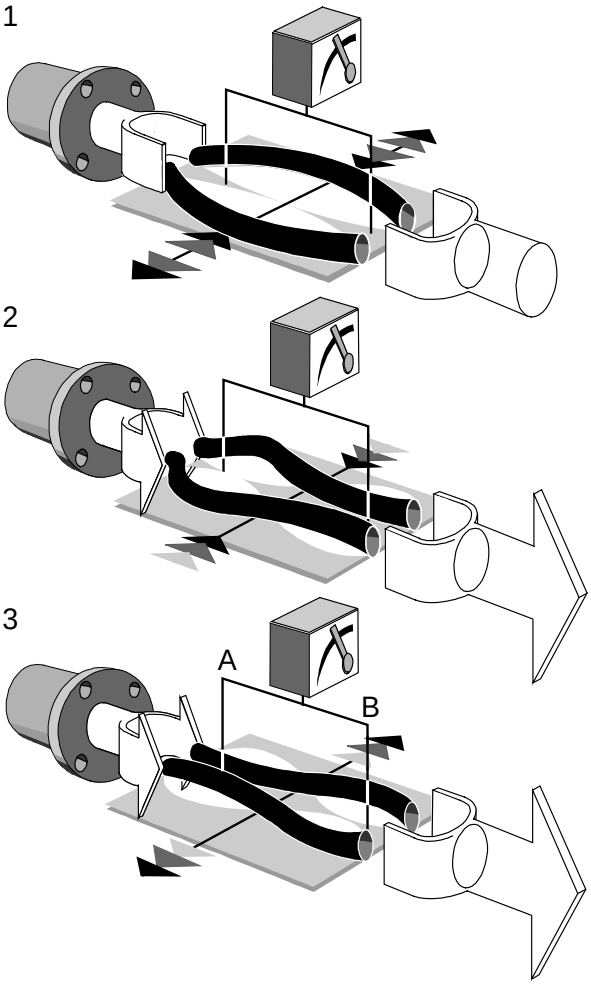


Figure 3 Coriolis Measuring Principle

Sensor

The sensor is the heart of the SCM 3000 ***PLUS*** and it contains the following physical components as shown in Figure 4.

1. Housing/containment vessel
2. Measuring pipes, three versions:

A Series - 1 curved pipe

M Series - 2 straight pipes

F Series - 2 curved pipes

3. Process connection
4. Electrodynamic sensors
5. Excitation system.

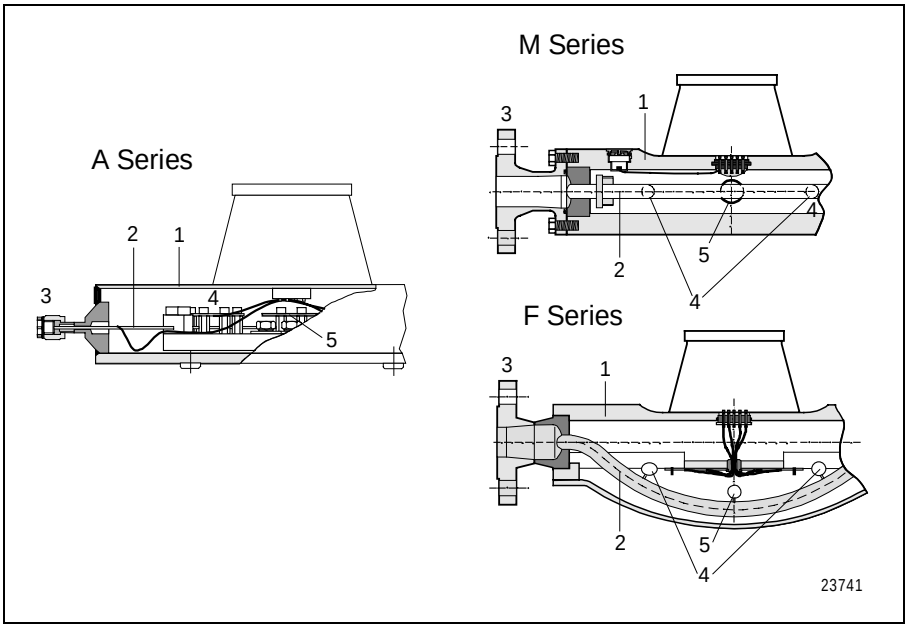


Figure 4 Sensor Components

Transmitter

Functions

The SCM 3000 *PLUS* transmitter converts the measured values coming from the sensor into standardized output signals. Depending on the configuration, a number of outputs are available:

- 4 to 20 mA current output with HART® protocol
- Pulse/frequency output or 2nd current output
- Relay 1, e.g. error
- Relay 2, e.g. limit value
- RS 485 interface

1000:1 Operable Flow Range

The SCM 3000 ***PLUS*** amplifier has very high measuring dynamics which allows it to operate across a 1000:1 measuring range within a specified accuracy. This also enables totalizer values to be accurately determined even in pulsating systems (e.g. reciprocating pumps).

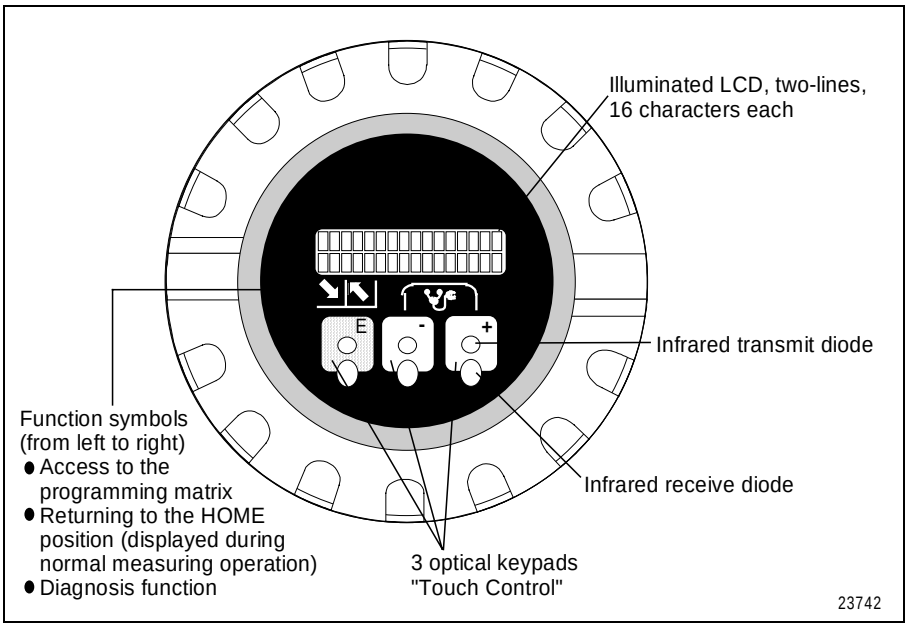


Figure 5 Transmitter Display and Operating Keys

Display

SCM 3000 ***PLUS*** has a two line, illuminated Liquid Crystal Display (LCD) (Figure 5). This enables two of the following measured values to be read simultaneously:

- Actual mass, volume, standard volume, as well as % content of target/carrier liquid with multiphase media.
- Density (e.g. kg/m^3, °Brix, °Baumé, °API, etc.)
- Temperature.
- Totalized flows.

The following are also displayed:

- Alarm messages (process errors)
- Error messages (instrument errors)
- Status messages
- Programming messages.

Communications

The SCM 3000 ***PLUS*** can communicate with higher control systems using an RS-485 interface. The current output is available with HART protocol. (See Table 1 for more details.)

Operational Safety

- The SCM 3000 ***PLUS*** measuring system fulfills the safety requirements according to EN 61010.
- The SCM 3000 ***PLUS*** measuring system fulfills all general requirements for electromagnetic compatibility (EMC) according to EN 500821 Part 1 and 2 / EN 50082 Part 1 and 2 as well as NAMUR recommendations.
- Extensive self-monitoring of the measuring system give complete operational safety. Any errors occurring are separately indicated via the configurable relay 1 output.
- On power failure, all measuring system data are safely stored in the EEPROM (no batteries).
- All outputs are electrically isolated from the power circuit, the measuring loop and from each other.

Operation

With the SCM 3000 ***PLUS*** matrix-driven operation, configuration is very easy. With only three keys, parameters and functions can be specifically chosen and modified, e.g.:

- Display of process variables
- Functions of current outputs
- Functions of the two totalizers
- Functions of the pulse/frequency output
- Relay functions (see page 5)
- Batching functions with integrated counter
- Communications parameters
- Process parameters (creep, empty, pipe detection, etc.)
- Density functions (standard density, °Brix, °Baumé, °API)

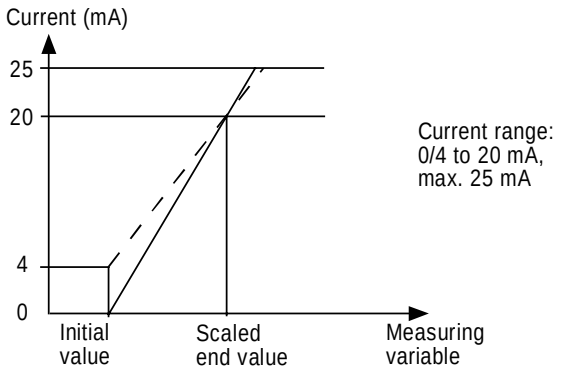
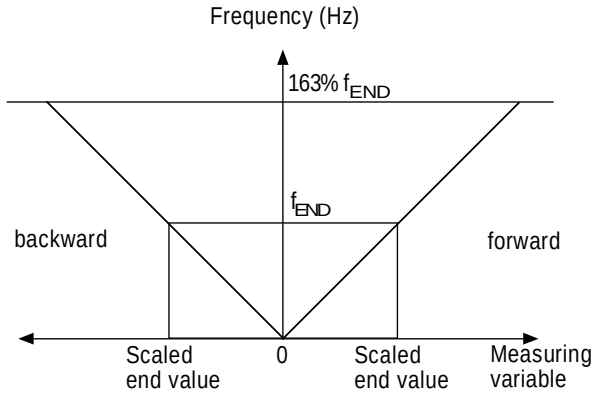
A number of languages are selectable for the display text. A help function is available at times during programming.

Inputs and Outputs

Configuring the Outputs

Various parameters or functions can be assigned to the outputs of the SCM 3000 ***PLUS*** measuring system (see Table 1). This allows the user to adapt the system exactly to the process conditions.

Table 1 Summary of I/O Functions

Current Output 1* and 2 (* with HART protocol)	Pulse/frequency output
 Current output 2 only with communications module "2 CUR". Bi-directional measurement: A current signal corresponding to the assigned value is also given with negative flow. The error response is programmable. **Assignable measuring variables**: • Flow (mass, volume, standard volume) • Flow of target material or carrier liquid(1) with multiphase liquids • Temperature • Density or values calculated by density function, e.g. °Brix	 *End frequency:* 0 to 10,000 Hz selectable, max. 163% of end frequency *Configuration:* active/passive, positive/negative pulse **Assignable measuring variables**: • Flow (mass, volume, standard volume) • Flow of target material or carrier liquid(1) with multiphase liquids
Relay Output 1	**Relay Output 2**
Factory settings: Function ⇒ "FAILURE" Relay contact ⇒ NO contact **Assignable functions:** • Fault indication (system error, failure): Fail to safe ⇒Relay coil dead on fault • Empty Pipe Detection (EPD): detects empty measuring pipes • Display of active end value (Current output 1 or 2) • Batching (pre-cutoff) • Flow direction • Limit value for either: mass or volume or standard volumetric flowrate or flowrate of target material or carrier liquid(1) with multiphase liquids, density or values calculated by density function, temperature.	Factory settings: Function ⇒ "LIMIT MASS FLOW" Relay contact ⇒ NC contact **Assignable functions:** • Empty Pipe Detection (EPD): detects empty measuring pipes • Display of active end value (Current output 1 or 2) • Batching (final cutoff) • Flow direction • Limit value for either: mass or volume or standard volumetric flowrate or flowrate of target material or carrier liquid(1) with multiphase liquids, density or values calculated by density function, temperature.

(1) Target material = material transported, e.g. lime powder, Carrier liquid = transporting material, e.g. water.

Table 1 Summary of I/O Functions (continued)

RS 485 interface/auxiliary input

Can be configured as an RS 485 interface **OR** auxiliary input as required. Only available with instruments having the communication module "RS 485".

RS 485 interface

The SCM 3000 ***PLUS*** measuring system can be connected to higher process controllers. Digital communications to Honeywell's TDC 3000 is accomplished through an RS 485 communication interface. The transmitter connects to a custom field termination assembly (FTA) which supports the proprietary communication exchange between the meter and the TDC system. The FTA is connected to the standard Honeywell Serial Interface IOP at the Advanced Process Manager (APM) for access to the TDC's control networks. The interface is based upon Honeywell's standard serial interface methods used for third party product connections.

Communication between the field device and the system is executed, controlled and monitored by the microprocessor-based FTA. Data is continuously sent to the SI IOP for access by the user. The FTA supports the SCM 3000 ***PLUS*** Coriolis flowmeter, the SVM 3000 ***PLUS*** Vortex flowmeter and a series of third party level instruments which include radar, ultrasonic, capacitance and servo technologies.

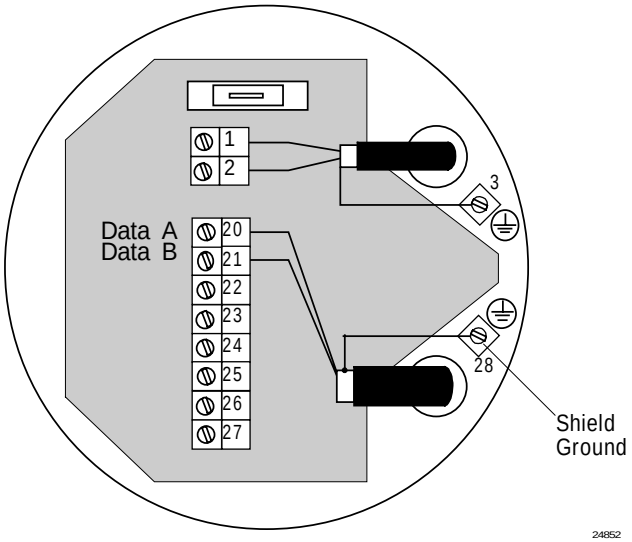
This interface approach combines user flexibility with a high speed digital communication link to the TDC system. The entire database of each instrument is available to the user. Selection of which process variable, configuration or operation parameter (i.e. instrument diagnostics) that needs to be monitored or controlled is entirely up to the user. In addition, previously inaccessible parameters are now available to the operator and process control engineer. These parameters include meter zero point, sensor coefficients and filters, engineering units and process simulation modes. This access can be used to apply advanced controls to the process or to improve instrument tuning and accuracy virtually "on line".

No HART protocol via the current output is available.

Auxiliary input

Applying a 3 to 30 Vdc voltage enables the following functions to be activated:

- Level Control
  - Dual range end value 1 ↔ 2 (Current output 1)
  - Measured value suppression
  - Dual range zero point 1 ↔ 2
- Pulse control
  - Activate batching cycle (in prep.)
  - Reset totalizer to zero
  - Static zero point calibration



Additionally a current or frequency output is available.

End Value Scaling (full scale value)

The current and the pulse/ frequency output can be scaled within the range of v_{med} = 0.5 to 10 m/s (1.6 to 32.8 ft/s). Scaling enables the user to assign maximum measuring parameters (e.g. maximum flowrate in m^3/h or maximum density in m^3/h or maximum density in kg/m^3) to the 20 mA current or end frequency value. The 0/4mA quiescent current (initial value) of the current output is also selectable. The measuring system can measure flowrates in both directions, i.e. bi-directionally. Current and pulse output are always positive values.

Electrical Connections

Figures 6 and 7 show typical wiring for the transmitter and remote version terminal boards.
Table 2 describes the transmitter wiring connections.

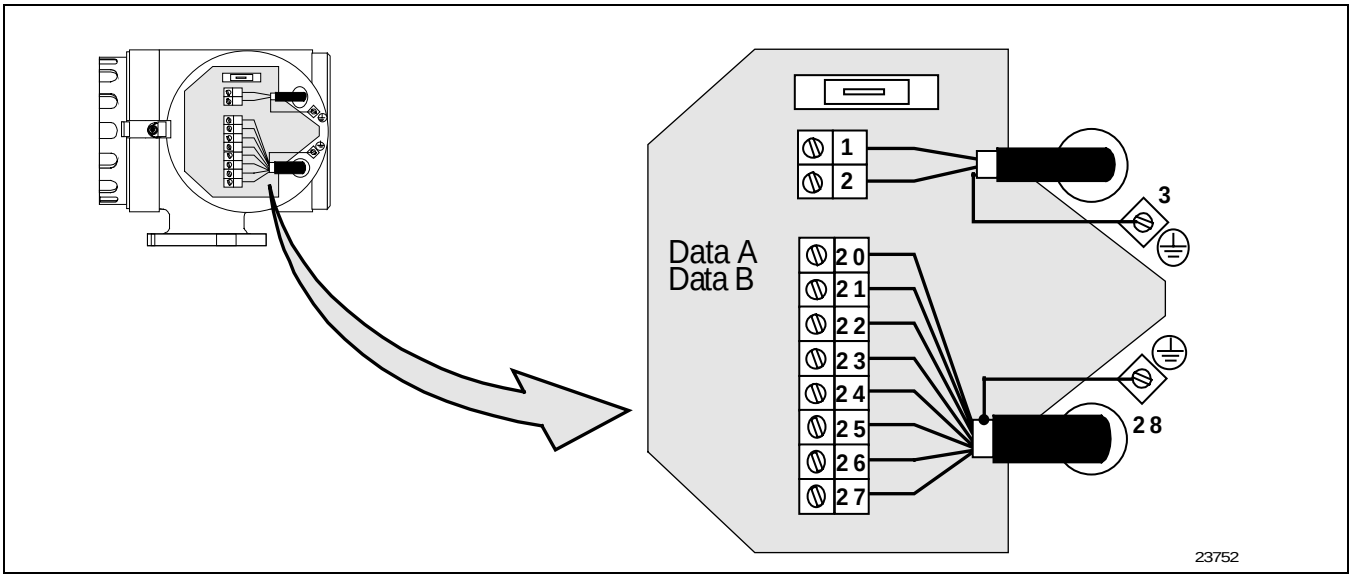
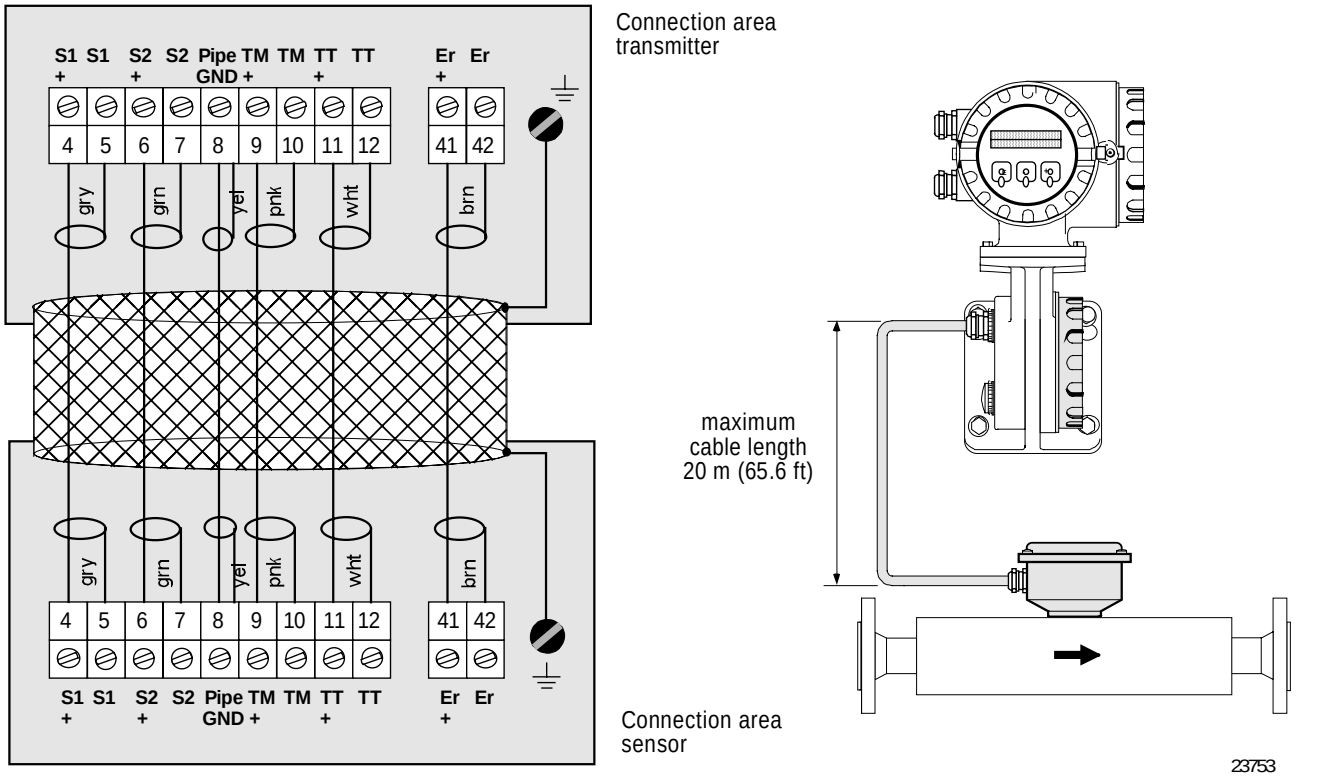


Figure 6 Power Supply, Input and Output Electrical Connections

Table 2 Typical Wiring Connections for SCM 3000 *PLUS* Transmitter

Term #	Board: "HART" interface	Board: "RS 485" interface	Board: "2 CUR." (2 current outputs)
3	Ground connection (ground wire)	Ground connection (ground wire)	Ground connection (ground wire)
1	L1 (for AC) L+ (for DC power supply)	L1 (for AC) L+ (for DC power supply)	L1 (for AC) L+ (for DC power supply)
2	N L-	N L-	N L-
20	Pulse/ frequency output active/passive, f = 2 to 10 kHz (maximum 16383 Hz) active: 24 Vdc, 25 mA (250 mA/20ms) passive: 30 Vdc, 250mA	Input/ output RS 485 or auxiliary input A +/- B -/+ (3 to 30 Vdc)	Current output 2 active, 0/4 to 20 mA R_L <700Ω
21			
22	Relay 1 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. failure	Relay 1 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. failure	Relay 1 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. failure
23			
24	Relay 2 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. limit value	Relay 2 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. limit value	Relay 2 maximum 60 Vac/0.5A maximum 30 Vdc/0.1A can be configured: e.g. limit value
25			
26	Current output 1 active, 0/4 to 20 mA R_L <700 Ω with HART protocol	Current output active, 0/4 to 20 mA R_L <700 Ω with HART protocol or Pulse/ frequency active/passive, f = 2 to 10 kHz (maximum 16383 Hz) active: 24 Vdc, 25 mA (250 mA/20ms) passive: 30 Vdc, 250 mA	Current output 1 active, 0/4 to 20 mA R_L <700 Ω with HART protocol
27			
28	Ground connection (shield of signal cable)	Ground connection (shield of signal cable)	Ground connection (shield of signal cable)



Cable specifications for the remote version
6 x 0.38 mm^2 (0.000588 in^2) PVC cable with common shielding and individually shielded cores.
Conductor resistance: <50 Ω/km; Capacitance: core/shield <420 pF/m.

Figure 7 Remote Version Electrical Connections

Installation Considerations

System Pressure

It is important to avoid cavitation as this can affect pipe oscillation.

No special measures need be taken for products which have properties similar to those of water under normal conditions.

With volatile liquids (hydrocarbons, solvents, liquefied gases) or liquids in suction line, the vapor pressure of the liquid must not drop below a point where the liquid begins to boil. It is also important not to release gases which are found naturally in many liquids. This can be prevented by ensuring that there is sufficient system pressure.

Ideally the sensor should be mounted:

- on the pressure side of pumps (avoiding low pressure)
- at the lowest point of a vertical pipeline.

Corrosion Resistance

With corrosive liquids, the chemical resistance of all wetted parts such as measuring pipes, gaskets and process connections must be thoroughly checked. This also applies to the liquids used for cleaning the SCM 3000 ***PLUS*** sensor.

Tracing, Thermal Insulation

With certain products heat transfer at the sensor must be avoided. A wide range of materials can be used for the necessary insulation.

Heating can be provided either electrically, e.g. by heating sheets, or supplied by copper pipes with heated water or steam. Depending on the product temperature, certain installation positions are to be observed (see Figure 8).

Steam jackets are available at additional cost.

Product Temperature/ Orientation

To ensure that the permitted ambient temperature range for the transmitter is not exceeded (-25 to +60°C [-13 to +140°F]), positioning is recommended as shown in Figure 8.

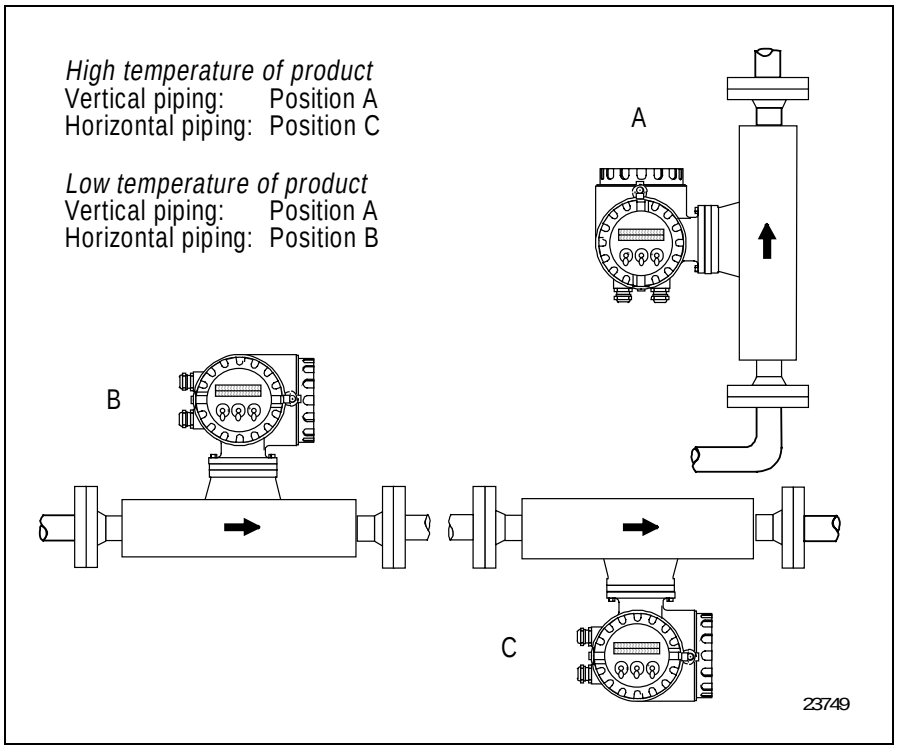


Figure 8 Sensor Positioning

Measuring Range

The most suitable sensor size is selected by taking into account the measuring range required and the permitted pressure drop.

With most applications, the optimum measuring range is considered to be between 20 to 50% of the highest full scale reading. (See Table 3.)
With abrasive media, e.g. liquids containing solids, a slow measuring range with a flow velocity less than 1m/s (3.28 ft/s) should be used.

For gas applications, the flow velocity should not exceed half of the sonic speed (mach 0.5) in that gas.

Application Assistance

While the technical information provided in this guide is usually adequate for sizing a meter for a particular application, Honeywell has Application Assistance available. Enclosed is an Application Data Sheet. When completed, it provides the information necessary for a thorough review by our Field Instrument Application Engineers. Using your application and installation information, process fluid data, and cost and operation objectives, these engineers will apply their wide industry experience and various application software programs to assist in determining the most cost-effective flow solution available. To use this Honeywell service, please complete the enclosed Application Data Sheet and forward it to your Honeywell Representative for submission to Field Instrument Application Engineering.

Table 3 Sensor Full Scale Values

Sensor Size		Selectable Full Scale Value			
		Liquids		Gases	
mm	(inches)	kg/h	(lb/h)	kg/h	(lb/h)
1	(0.039)	0 to 20	(0 to 44.09)	0 to 10	(0 to 21.93)
2	(0.07)	0 to 100	(0 to 220.45)	0 to 50	(0 to 110.23)
4	(0.15)	0 to 450	(0 to 992.1)	0 to 125	(0 to 275.57)
8	(0.3)	0 to 1996	(0 to 4400)	0 to 200	(0 to 440.92)
15	(0.6)	0 to 6496	(0 to 14,320)	0 to 650	(0 to 1432.98)
25	(1.0)	0 to 17,962	(0 to 39,600)	0 to 1800	(0 to 3968.25)
40	(1.5)	0 to 44,997	(0 to 99,200)	0 to 4500	(0 to 9920.63)
50	(2)	0 to 70,000	(0 to 154,320)	0 to 7000	(0 to 15,432.09)
80	(3)	0 to 179,988	(0 to 396,800)	0 to 18,000	(0 to 39,682.54)

Mounting

No special fittings such as brackets are needed. External forces are absorbed by the construction of the device, e.g. the secondary containment vessel. The high frequency oscillation of the measuring pipes ensures that operational function of the measuring system is unaffected by plant vibration.

When mounting, no special precautions need to be taken for turbulence-generating fittings (valves, bends T-pieces, etc.) as long as no cavitation occurs.

Orientation (A Series)

Vertical - This is best with the flow direction upwards (Figure 9). Entrained solids sink and gases rise from the measuring pipe. This also allows the measuring pipe to be completely drained and protects it from the build-up of solids.

Horizontal - When correctly installed, the transmitter housing is either above or below the piping. This assures that no gas bubbles collect or solids deposit in the curved measuring pipe.

Wall and post mounting - The sensor may not be suspended in the piping without support or fixation to avoid excessive stress on the material around the process connection (Figure 8). The sensor housing base plate allows table, wall, or post mounting. The post mounting requires a special mounting kit.

Orientation (M/F Series)

Vertical - This is best with the flow direction upwards (Figure 10). Entrained solids sink and gases rise from the measuring pipes when the product is not flowing. This also allows measuring pipes to be completely drained and protects them from the build-up of solids.

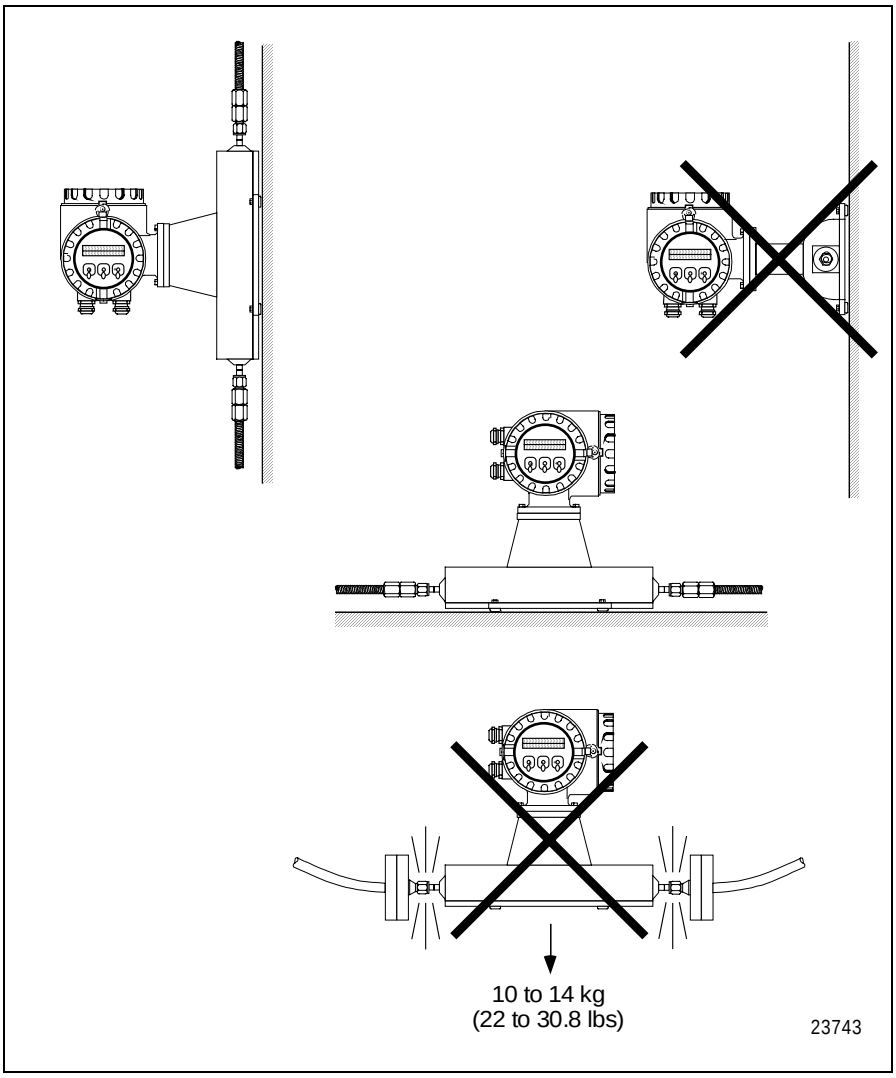


Figure 9 A Series Orientation

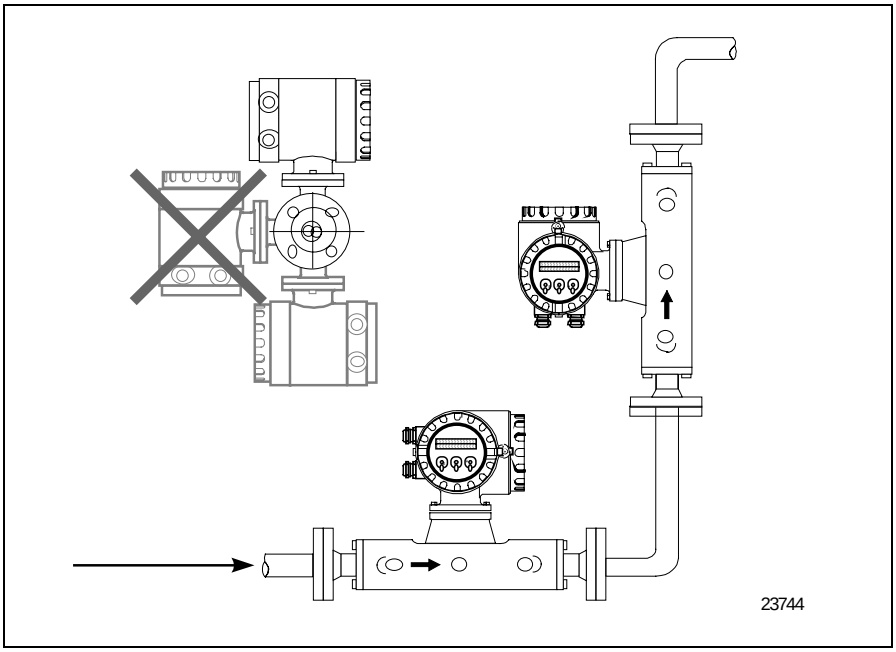


Figure 10 M and F Series Orientation

Horizontal - The measuring pipes must lie side by side. When correctly installed, the transmitter housing is either above or below the piping. (See Figure 10.)

F Series measuring pipes are slightly curved. Therefore, the sensor's horizontal position depends on the fluid properties of the product (outgassing, solids content) (see Figure 11).

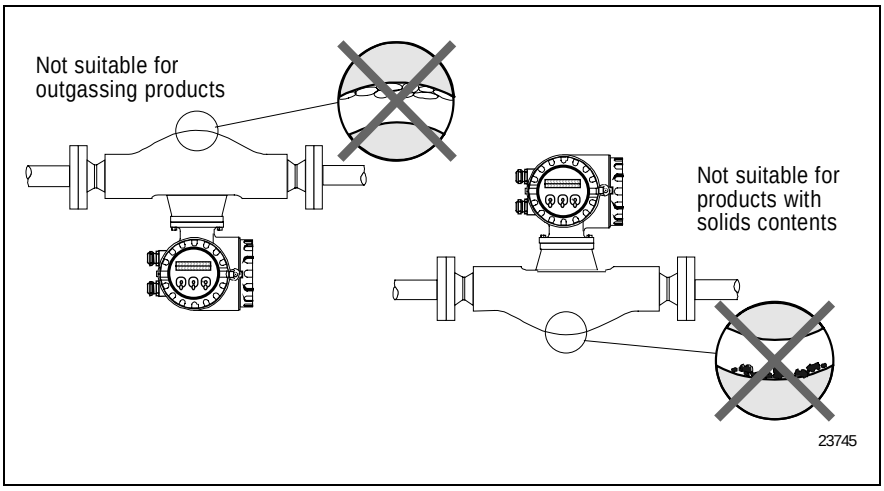


Figure 11 Horizontal Positioning for F Series

Mounting location

Air or entrained gases in the measuring pipe may cause errors in measurement and therefore the following mounting installations are to be avoided:

- Do not install at the highest point of the piping
- Do not install directly upstream in a vertical pipeline before a free pipe outlet.

Correct installation is possible using the recommendation in Figure 12. Restrictions in the piping or an orifice with a smaller cross section than the measuring instrument can prevent the sensor from running empty during measurement (Table 4).

Table 4 Sensor Maximum Orifice Diameter

If Sensor size is . . .		Then Maximum Orifice Diameter is . . .	
mm	**(inches)**	**mm**	**(inches)**
1	(0.039)	0.8	(0.31)
2	(0.07)	1.5	(0.05)
4	(0.15)	3	(0.19)
8	(0.3)	6	(0.23)
15	(0.6)	10	(0.40)
25	(1.0)	14	(0.55)
40	(1.5)	22	(0.86)
50	(2)	28	(1.09)
80	(3)	50	(2)

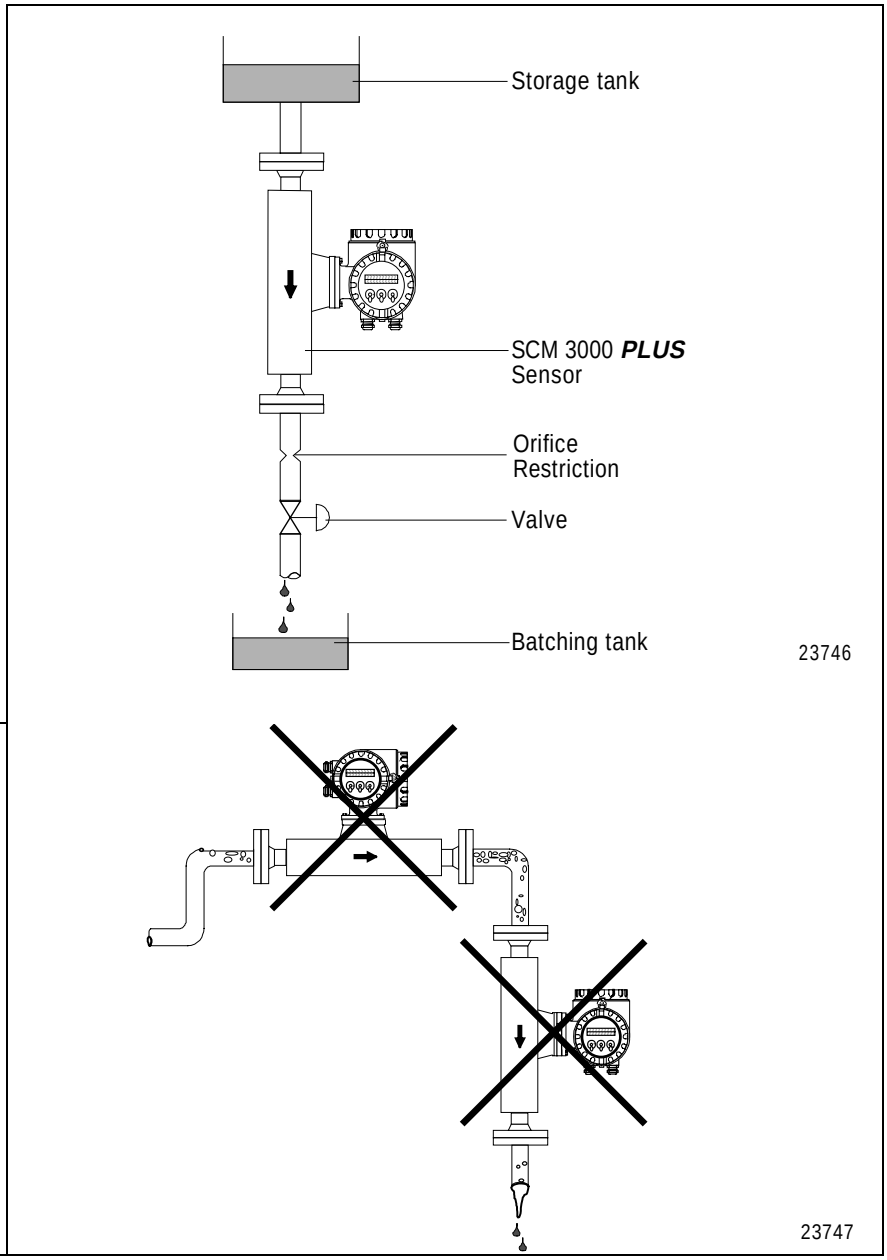


Figure 12 Mounting Location (vertical piping)

Zero Point Calibration

Once the sensor has been installed, a zero point calibration (ZPC) should be carried out under process conditions in order to ensure that measurement is accurate. The static zero point calibration should be carried out only with the measuring pipes full and no flow conditions existing.

This can be achieved with shut-off valves both upstream and downstream of the sensor (or use existing valves if present). (See Figure 13.)

ZPC of dynamic fluids (non-Newtonian) must be handled differently. Consult factory for procedure and plant feasibility.

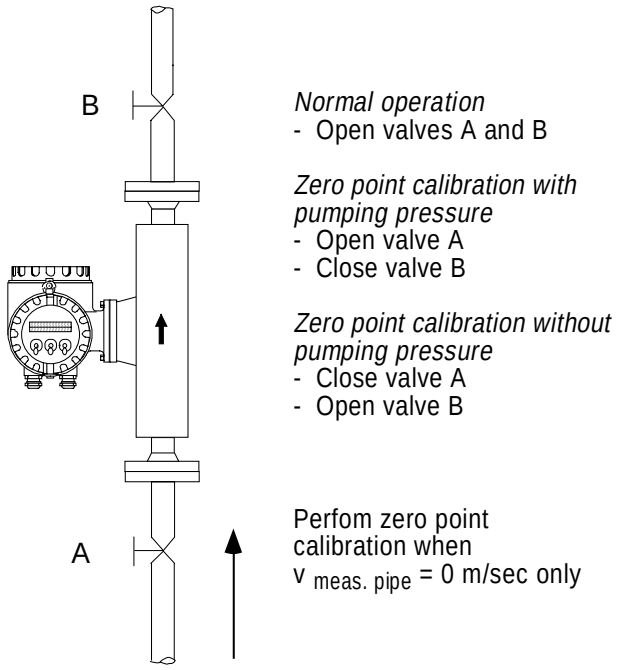


Figure 13 Static Zero Point Calibration

Pressure Loss

The pressure drop is dependent on the characteristics of the medium and its flowrate. The following formulae in Table 5 and appropriate sensor constants from Table 6 can be used to approximately calculate the pressure loss.

Table 5 Pressure Loss Calculations

	A Series	M /F Series
Reynolds No.	$Re = \frac{4 \cdot m}{\pi \cdot d \cdot \upsilon \cdot \rho}$	$Re = \frac{2 \cdot m}{\pi \cdot d \cdot \upsilon \cdot \rho}$
Re ≥ 2300	$\Delta p = K \cdot \upsilon^{0.25} \cdot m^{1.75} \cdot \rho^{-0.75}$	$\Delta p = K \cdot \upsilon^{0.25} \cdot m^{1.85} \cdot \rho^{-0.86}$
Re < 2300	$\Delta p = K1 \cdot \upsilon \cdot m$	$\Delta p = K1 \cdot \upsilon \cdot m + \frac{K2 \cdot \upsilon^{0.25} \cdot m^2}{\rho}$

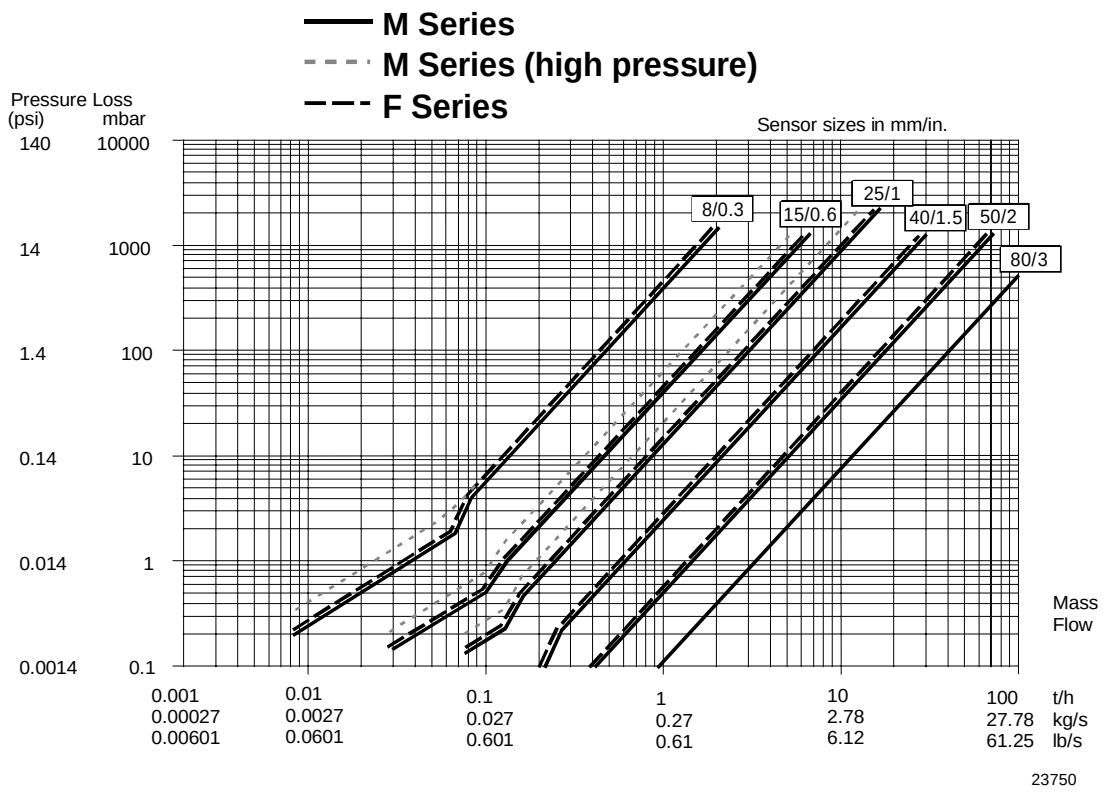
Δp = pressure loss (mbar, psi)
υ = kinematic viscosity m^2/s, ft^2/s)
m = mass flowrate (kg/s, lb/s)
ρ = fluid density (kg/m^3, lb/ft^3)
d = internal diameter of measuring pipes (m, ft)
K to K2 = constants dependent on the nominal diameter

Calculations should be done in metric and final result converted to English units, if required.

Table 6 Sensor Constants for Pressure Drop Calculations

	Sensor Size mm	d (Inside diameter of measuring pipe) d x 10^{-3}	K (liquids)	K (gases)	K1	K2
A Series	1	1.10	1.2 x 10^{11}	2.0 x 10^{11}	1.3 x 10^{11}	-
	2	1.80	1.6 x 10^{10}	2.7 x 10^{10}	2.4 x 10^{10}	-
	4	3.50	9.4 x 10^{8}	16.0 x 10^{8}	2.3 x 10^{9}	
A Series High Pressure	2	1.40	5.4 x 10^{10}	9.2 x 10^{10}	6.6 x 10^{10}	-
	4	3.00	2.0 x 10^{9}	3.4 x 10^{9}	4.3 x 10^{9}	-
M Series	8	5.53	5.2 x 10^{7}	8.8 x 10^{7}	8.6 x 10^{7}	1.7 x 10^{7}
	15	8.55	5.3 x 10^{6}	9.0 x 10^{6}	1.7 x 10^{7}	9.7 x 10^{5}
	25	11.38	1.7 x 10^{6}	2.9 x 10^{6}	5.8 x 10^{6}	4.1 x 10^{5}
	40	17.07	3.2 x 10^{5}	5.4 x 10^{5}	1.2 x 10^{6}	1.2 x 10^{5}
	50	25.60	6.4 x 10^{4}	10.9 x 10^{4}	4.5 x 10^{5}	1.3 x 10^{4}
	80	38.46	1.4 x 10^{4}	2.4 x 10^{4}	8.2 x 10^{4}	3.7 x 10^{3}
M Series High Pressure	8	4.93	6.0 x 10^{7}	10.2 x 10^{7}	1.4 x 10^{8}	2.8 x 10^{7}
	15	7.75	8.0 x 10^{6}	13.6 x 10^{6}	2.5 x 10^{7}	1.4 x 10^{6}
	25	10.20	2.7 x 10^{6}	4.6 x 10^{6}	8.9 x 10^{6}	6.3 x 10^{5}
F Series	8	5.35	5.7 x 10^{7}	9.7 x 10^{7}	9.6 x 10^{7}	1.9 x 10^{7}
	15	8.30	5.8 x 10^{6}	9.9 x 10^{6}	1.9 x 10^{7}	10.6 x 10^{5}
	25	12.00	1.9 x 10^{6}	3.2 x 10^{6}	6.4 x 10^{6}	4.5 x 10^{5}
	40	17.60	3.5 x 10^{5}	6.0 x 10^{5}	1.3 x 10^{6}	1.3 x 10^{5}
	50	26.00	7.0 x 10^{4}	11.9 x 10^{4}	5.0 x 10^{5}	1.4 x 10^{4}

Calculations should be done in metric and final result converted to English units, if required.



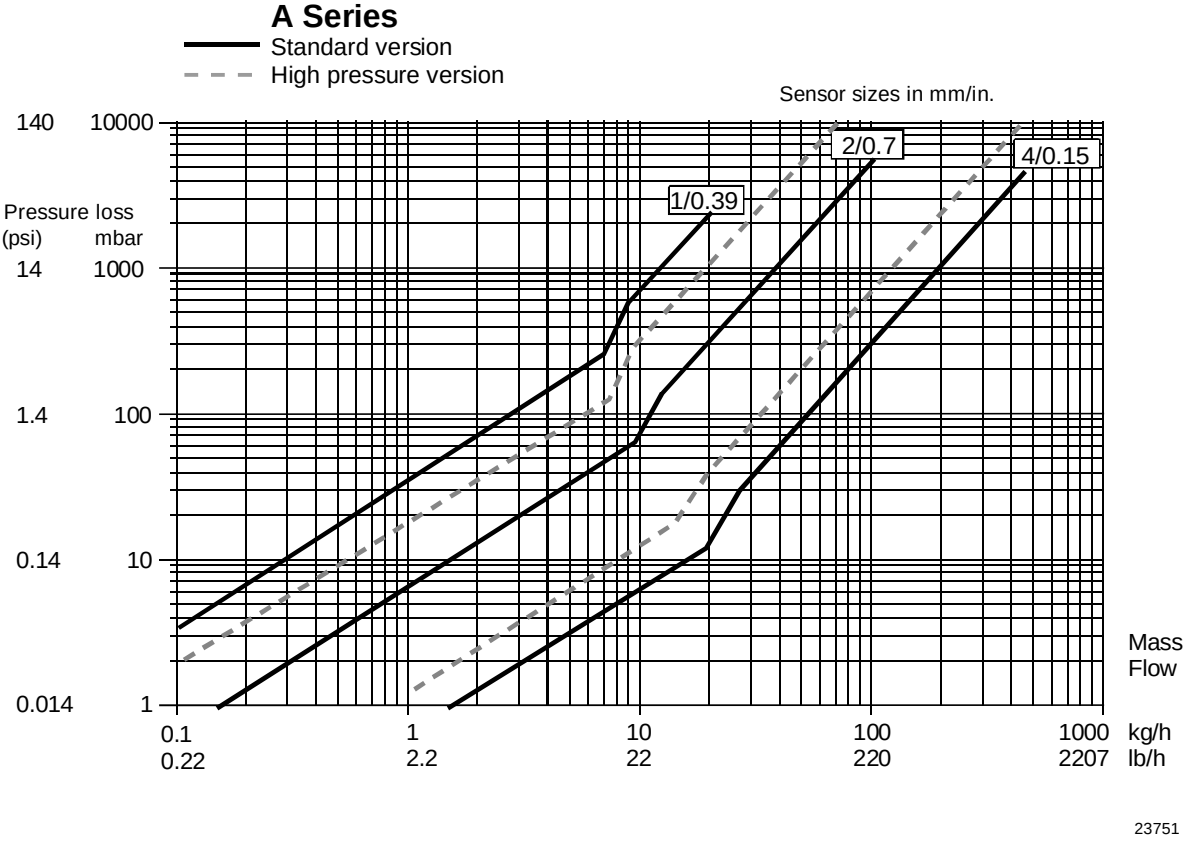
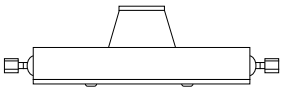
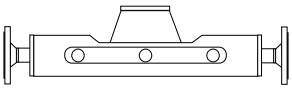
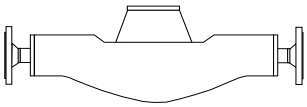
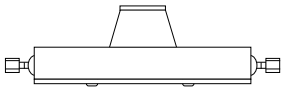
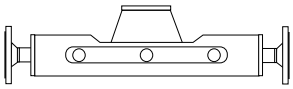
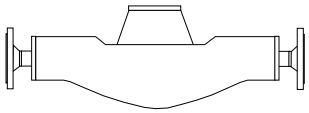


Figure 14 Pressure Drop for SCM 3000 *PLUS* Sensors Used with Water

Specifications

SCM 3000 *PLUS* Specifications

Sensor Data			
Parameter	**A Series** 	**M Series** 	**F Series** 
Sensor Size mm (inches)	DN 1 (0.039") DN 2 (0.07") DN 4 (0.15")	DN 8 (0.31") DN 15 (0.6") DN 25 (1") DN 40 (1.5") DN 50 (2") DN 80 (3")	DN 8 (0.31") DN 15 (0.6") DN 25 (1") DN 40 (1.5") DN 50 (2")
Nominal Pressure	*Fittings:* maximum 160 bar *DIN:* PN 40 *ANSI:* Cl 150, Cl 300 *JIS:* 10K *Containment vessel:* 25 bar resp. 150 psi	*DIN:* PN 40 to 100 *ANSI:* Cl 150, Cl 300, Cl 600 *JIS:* 10K, 20K, 40K, 63K *Containment vessel:* 40 bar (optional 100 bar) or 300 psi (optional 600 psi)	*DIN:* PN 40 to 100 *ANSI:* Cl 150, Cl 300, Cl 600 *JIS:* 10K, 20K, 40K, 63K *Containment vessel:* 25 bar (optional 40 bar) or 150 psi (optional 300 psi)
Process Connections	*Welded process connections:* 4-VCO-4 fittings ½" Tri-Clamp *Screw-on, replaceable process connections:* Flanges (DIN, ANSI, JIS B2210) NPT-F fittings, SWAGELOCK® fittings	*Screw-on, replaceable process connections:* Flanges (DIN, ANSI, JIS B2210) *Sanitary connections:* Hygienic coupling DIN 11851, Tri-Clamp, SMS coupling	*Welded process connections:* Flanges (DIN, ANSI, JIS B2210) *Sanitary connections:* Hygienic coupling DIN 11851, Tri-Clamp, SMS coupling
Physical Housing/Containment Vessel	*Surfaces resistant to acids and alkalis:* 1.4301 (340L) stainless steel and powder-coated aluminum	*Surfaces resistant to acids and alkalis:* 8 (0.31") to 50 (2"): chemically nickel-plated steel. 80 (3"): 1.4313 and powder-coated aluminum	*Surfaces resistant to acids and alkalis:* 1.4301 (340L) stainless steel and powder-coated aluminum
Measuring Pipes	1.4539 (904L) stainless steel, Hastelloy C-22 (in prep.)	Titanium Gr. 2 (DN 8 to 50) Titanium Gr. 9 (DN 80)	1.4539 (904L) stainless steel, Hastelloy C-22
Gaskets	No internal gaskets for VCO fittings and Tri-Clamp connections	Sensor/process connection: O-rings in Viton, Kalrez, Silicone, EPDM, FEP-coated etc. or silicone flat gasket with sanitary versions.	No internal gaskets.
Process Connections	See Table 11	See Tables 15 through 20	1.4404 (316L) or Hastelloy C-22
Connection Housing (remote version)	1.4301 (340L) stainless steel	1.4301 (340L) stainless steel	1.4301 (340L) stainless steel

Sensor Data (continued)			
Parameter	**A Series** 	**M Series** 	**F Series** 
Process Temperatures	-50 to +200ºC (-58 to +417.6ºF)	-50 to +150ºC (-58 to +327.6ºF)	-50 to +200ºC (-58 to +417.6ºF)
Protection	IP 67 (EN 60529), NEMA 4X	IP 67 (EN 60529), NEMA 4X	IP 67 (EN 60529), NEMA 4X
Cable Glands (remote version)	PG 13.5; NPT ½" M20 x 1.5; G ½"	PG 13.5; NPT ½" M20 x 1.5; G ½"	PG 13.5; NPT ½" M20 x 1.5; G ½"
Power Supply	Sensor power is supplied by the transmitter.	Sensor power is supplied by the transmitter.	Sensor power is supplied by the transmitter.

Transmitter Data	
Parameter	**Description**
Housing Material	Powder-coated die-cast aluminum
Protection	IP 67 (EN 60529), NEMA 4X
Ambient Temperature	-25 to +60º C (-13 to +140ºF) (Complete measuring system) NOTES: • For Temperature data of Ex version flowmeters, see Tables 9 and 10. • Depending on the fluid temperature, certain installation positions are to be observed to ensure that the permitted ambient temperature range for the transmitter is not exceeded. (See page 9, Figure 8.) • An all-weather cover should be used to protect the housing from direct sunlight when mounting in the open. This is especially important in warmer climates and with high ambient temperatures.
Shock and Vibration Resistance	*Vibration:* up to 1g, 10 to 150 Hz to IEC 68-2-6 *Shock:* IEC 68-2-31 (complete measuring system)
Cable Glands	PG 13.5; NPT ½" M20 x 1.5; G ½"
Power Supply	85 to 260 Vac (45 to 65 Hz) 20 to 55 Vac, 16 to 62 Vdc *Power failure:* bridges min. 1 power cycle (≤22 ms)
Power Consumption	*AC:* <15 VA (including sensor) *DC:* <15 W (including sensor)
Electrical Isolation	All circuits for inputs, outputs, power supply and sensors are electrically isolated from each other.

Transmitter Data	
Parameter	**Description**
Outputs	
Current Output 1 (with HART Protocol) Current Output 2	0/4 to 20 mA adjustable (also acc. to NAMUR recommendations), R_L <700 Ω, freely assignable to different variables (see page 6), time constant freely selectable (0.01 to 100.00 s), full scale value selectable, temperature coefficient typical 0.005% of full scale/ºC. HART protocol via current output 1 only.
Pulse/Frequency Output	Selectable as active/passive, freely assignable to one flow variable (see Table 1). *Active:* 24 Vdc, 25 mA (250 mA for 20 ms), R_L >100 Ω, *Passive:* Open Collector, 30 Vdc, 250 mA Frequency output: f_{END} = selectable to max. 10 kHz, on/off ratio is 1:1. pulse width max. 2 seconds *Pulse output:* pulse weighting adjustable, pulse polarity adjustable, pulse width adjustable (50 ms to 2 s) Above a frequency of $^1/_{(2 \times \text{pulse width})}$ the on/off ratio is 1:1.
Relay Output 1	Either NC or NO contact available *Factory setting:* NO Maximum 60 Vac/0.5 A or maximum 30 Vdc/0.1 A Electrically isolated, can be configured (see Table 1)
Relay Output 2	Either NC or NO contact available *Factory setting:* NC Maximum 60 Vac/0.5 A or maximum 30 Vdc/0.1 A Electrically isolated, can be configured (see Table 1)
RS 485 Interface/Auxiliary Input	Auxiliary input: U = 3 to 30 Vdc, R_i = 1.8 kΩ, pulse or level control, can be configured (see Table 1).
Communications	RS 485 interface (serial interface protocol) SMART protocol (HART protocol via current output)
Data Storage on Power Failure	EEPROM saves measuring system data on power failure (no batteries required).
Display	Liquid crystal display, illuminated, two-line (16 characters each)
Electromagnetic Compatibility (EMC)	According to EN 50081 Part 1 and 2 (interference emission) / EN 50082 Part 1 and 2 (interference immunity) as well as to NAMUR (Association of Standards for Control and Regulation in the Chemical Industry) recommendations (for entire measuring system)
Safety Approvals	See Table 7.

Performance	
Parameter	**Description**
Mass Flowrate	
Reference Conditions	Error limits based on ISO/DIS 11631 +20 to +30ºC (+68 to +86ºF); 2 to 4 bar (28.6 to 57 psi) Calibration facilities based on national standards Zero point calibrated under operation conditions and field-density calibration executed (or special density calibration)
Accuracy*	*Mass flowrate:* Liquids: ±0.1% of reading ±0.005% of full scale Gases: ±0.5% of reading ±0.005% of full scale *Volume flowrate (liquids):* A/M Series: ±0.25% of reading ±0.005% of full scale F Series: ±0.15% of reading ±0.005% of full scale
Density	
Standard Calibration	*A/M Series:* ±0.02 kg/l (±0.044 lb/l) *F Series:* ±0.01 kg/l (±0.022 lb/l) *Range:* 0.5 to 1.5 kg/l; 0 to 40ºC (1.10 to 3.30 lb/l; +32 to +104ºF)
Optional Calibration	*A/M Series:* ±0.002 kg/l (±0.0044 lb/l) *F Series:* ±0.001 kg/l (±0.0022 lb/l) Within ±0.1 kg/l (0.22 lb/l) and ±25ºC (±77ºF) for a specific density/temperature pair of values
Density Calibration in the Field	*A/M Series:* ±0.001 kg/l (±0.0022 lb/l) for the calibrated density value *F Series:* ±0.0005 kg/l (±0.0011 lb/l) for the calibrated density value
Temperature	±0.5ºC ±0.005 x Temperature of the liquid in ºC (±0.9ºF ±0.005 x Temperature of the liquid in ºF)
Repeatability	*Mass flowrate:* Liquids: ±0.05% of reading ±0.0025% of full scale Gases: ±0.25% of reading ±0.0025% of full scale *Volume flowrate (liquids):* A/M Series: ±0.1% of reading ±0.0025% of full scale F Series: ±0.05% of reading ±0.0025% of full scale Refer to Table 8.

* With reference to pulse output, additional measuring error of the current output: ±5µA typical

Table 7 Approval Bodies for SCM 3000 *PLUS* Flowmeter

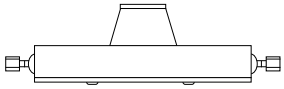
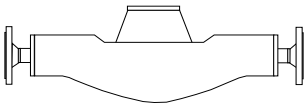
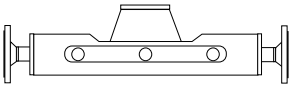
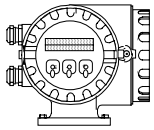
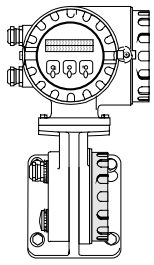
Sensor	Ex CENELEC	FM Approval
A Series  **F Series** 	EEX ib IIC T2-T6	Class I, II, III, Division 1, Groups A, B, C, D, E, F, G
M Series 	EEx ib IIC T2-T6 DN 8 to 50 mm (0.31 to 2 in) EEX ib IIB T2-T6 DN 80 mm (3 in)	Class I, II, III, Division 1, Groups A, B, C, D, E, F, G DN 8 to 50 mm (3/8 to 2 in) Class I, II, III, Division 1, Groups C, D, E, F, G DN 80 (3 in)
Transmitter		
	EEx d e ib IIC T2-T6 EEx d ib IIC T2-T6 EEx ib IIB T2-T6 DN 80 mm (3 in) *only* EEx ib IIB T2-T6 DN 80 mm (3 in) *only*	Class I, II, III, Division 1, Groups A, B, C, D, E, F, G A/M/F Series: DN 8 to 50 mm (0.31 to 2 in)
	EEx d e (ib) IIB/IIC T2-T6 EEx d (ib) IIB/IIC T2-T6	Class I, II, III, Division 1, Groups C, D, E, F, G M Series: DN 80 (3 in)

Table 8 Typical Repeatability Values for Given Full Scale Values

Sensor Size Diameter		Maximum Full Scale		±0.0025% of Full Scale		±0.005% of Full Scale		±0.01% of Full Scale	
mm	**inches**	**kg/h**	**lb/h**	**kg/h**	**lb/h**	**kg/h**	**lb/h**	**kg/h**	**lb/h**
1	0.039	20	44.1	±0.0005	±0.0011	±0.0010	±0.0022	±0.002	±0.0044
2	0.07	100	220.5	±0.0025	±0.0055	±0.0050	±0.011	±0.010	±0.022
4	0.15	450	992.1	±0.0113	±0.0248	±0.0225	±0.0496	±0.045	±0.099
8	0.31	2000	4409.2	±0.0500	±0.110	±0.1000	±0.220	±0.200	±0.440
15	0.6	6500	14,329.8	±0.1630	±0.359	±0.3250	±0.716	±0.650	±1.432
25	1	18000	39,473.7	±0.4500	±0.992	±0.9000	±1.980	±1.800	±3.968
40	1.5	45000	99,206.3	±1.1250	±2.480	±2.2500	±4.960	±4.500	±9.920
50	2	70000	154,320.9	±1.7500	±3.858	±3.5000	±7.710	±7.000	±15.432
80	3	180000	396,825.4	±4.5000	±9.920	±9.0000	±19.84	±18.000	±39.682

The full scale reading possible depends on the liquid and process parameters.

EXAMPLE CALCULATION: *F Series, Sensor Diameter 25 mm, 0.1% calibration, Flowrate = 3600 kg/h*

$$\text{Measured error} = \pm 0.1\% \pm \frac{0.9 \text{ kg/h}}{3600 \text{ kg/h}} \times 100\% = \pm 0.125\%$$

Thermal Data and Assignment to Temperature Classes

Table 9 Temperature Data Compact Ex Version

Ex CENELEC

	Maximum Fluid Temperature				
at Ta = 40°C (104ºF)	**T6**	**T5**	**T4**	**T3**	**T2**
A Series **DN 2/4 mm (0.07/0.15 in)**	40ºC 104ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	200ºC 392ºF
at Ta = 50ºC (122ºF)					
A Series **DN 2/4 mm (0.07/0.15 in)**	-	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	200ºC 392ºF
M Series **DN 8/15 mm (0.31/0.6 in)**	55ºC 131ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	-
M Series **DN 25 - 50 mm (1 - 2in)**	65ºC 149ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	-
M Series **DN 80 mm (3 in)**	65ºC 149ºF	80ºC 176ºF	110ºC 230ºF	150ºC 302ºF	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	95ºC 203ºF	130ºC 266ºF	170ºC 338ºF	200ºC 392ºF
at Ta = 60ºC (140ºF)					
A Series **DN 2/4 mm (0.07/0.15 in)**	-	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	200ºC 392ºF
M Series **DN 8/15 mm (0.31/0.6 in)**	-	95ºC 203ºF	100ºC 212ºF	-	-
M Series **DN 25 - 50 mm (1 - 2in)**	65ºC 149ºF	95ºC 203ºF	100ºC 212ºF	-	
M Series **DN 80 mm (3 in)**	65ºC 149ºF	80ºC 176ºF	100ºC 212ºF	-	
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	95ºC 203ºF	100ºC 212ºF	-	-

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	Maximum Fluid Temperature						
at Ta = 40ºC (104ºF)	**T6**	**T5**	**T4A**	**T4**	**T3A**	**T2A**	**T2B**
A Series **DN 2/4 (0.07/0.15 in)**	40ºC 104ºF	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
at Ta = 50ºC (122ºF)							
A Series **DN 2/4 (0.07/0.15 in)**	-	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
M Series **DN 8 - 80 mm (0.31 - 3in)**	50ºC 122ºF	60ºC 140ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	-	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	70ºC 158ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	200ºC 392ºF	-
at Ta = 60ºC (140ºF)							
A Series **DN 2/4 (0.07/0.15 in)**	-	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
M Series **DN 8 - 80 mm (0.31 - 3in)**	-	60ºC 140ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	-	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	70ºC 158ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	200ºC 392ºF	-

*Ta = Ambient Temperature

Thermal Data and Assignment to Temperature Classes

Table 10 Temperature Data Ex Remote Sensor

Ex CENELEC					
	Maximum Fluid Temperature				
at Ta = 40ºC (104ºF)	**T6**	**T5**	**T4**	**T3**	**T2**
A Series **DN 2/4 mm (0.07/0.15 in)**	40ºC 104ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	200ºC 392ºF
at Ta = 50ºC (122ºF)					
M Series **DN 8/15 mm (0.31/0.6 in)**	55ºC 131ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	-
at Ta = 60ºC (140ºF)					
A Series **DN 2/4 mm (0.07/0.15 in)**	-	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	200ºC 392ºF
M Series **DN 8/15 mm (0.31/0.6 in)**	-	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	-
M Series **DN 25 - 50 mm (1 - 2in)**	65ºC 149ºF	95ºC 203ºF	130ºC 266ºF	150ºC 302ºF	-
M Series **DN 80 mm (3 in)**	65ºC 149ºF	80ºC 176ºF	110ºC 230ºF	150ºC 302ºF	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	95ºC 203ºF	130ºC 266ºF	170ºC 338ºF	200ºC 392ºF

FM Approval							
	Maximum Fluid Temperature						
at Ta = 40ºC (104ºF)	**T6**	**T5**	**T4A**	**T4**	**T3A**	**T2A**	**T2B**
A Series **DN 2/4 (0.07/0.15 in)**	40ºC 104ºF	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
at Ta = 50ºC (122ºF)							
A Series **DN 2/4 (0.07/0.15 in)**	-	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
M Series **DN 8 - 80 mm (0.31 - 3in)**	50ºC 122ºF	60ºC 140ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	-	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	70ºC 158ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	200ºC 392ºF	-
at Ta = 60ºC (140ºF)							
A Series **DN 2/4 (0.07/0.15 in)**	-	95ºC 203ºF	115ºC 239ºF	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
M Series **DN 8 - 80 mm (0.31 - 3in)**	-	60ºC 140ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	-	-
F Series **DN 8 - 50 (0.31 - 2 in)**	60ºC 140ºF	70ºC 158ºF	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	200ºC 392ºF	-
at Ta = 85ºC (185ºF)							
A Series **DN 2/4 (0.07/0.15 in)**	-	-	-	130ºC 266ºF	140ºC 284ºF	190ºC 374ºF	200ºC 392ºF
M Series **DN 8 - 80 mm (0.31 - 3in)**	-	-	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	-	-
F Series **DN 8 - 50 (0.31 - 2 in)**	-	-	85ºC 185ºF	105ºC 221ºF	150ºC 302ºF	200ºC 392ºF	-

*Ta = Ambient Temperature

Dimensions – A Series

A Series - 1, 2, and 4 mm (0.039, 0.07, and 0.15 in)

Compact version: Figure 15 and Table 11.

Remote version: Figure 16 and Table 11.

NOTE: Dimensions for the explosion proof flowmeter versions (Ex and FM) are the same as the standard version, except where noted (*).

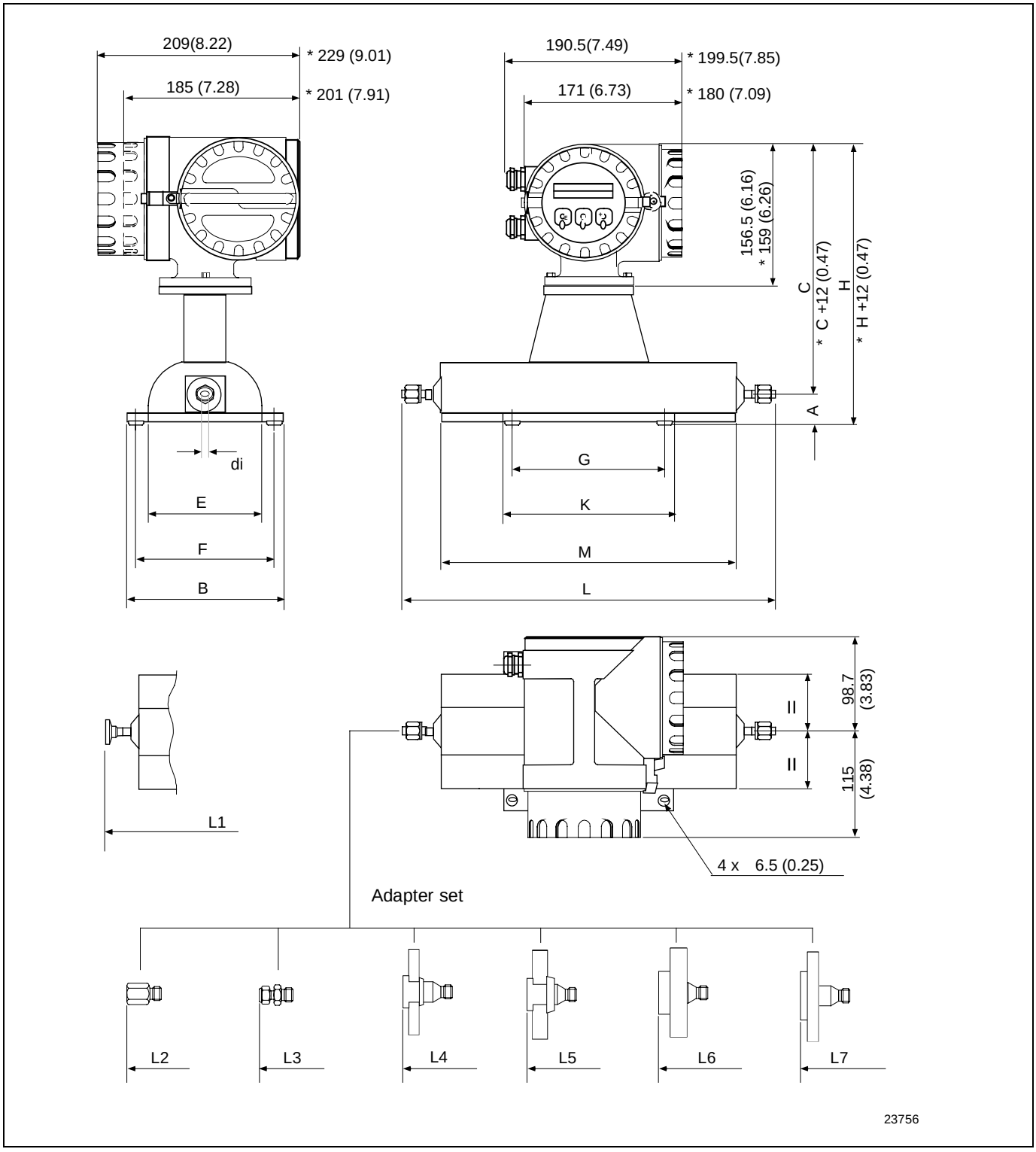


Figure 15 A Series Compact Sensor and Transmitter Dimensions

Table 11 A Series - Compact and Remote Versions
[Sizes 1 mm (0.039 in.), 2 mm (0.07 in.), and 4 mm (0.15 in.)]

	Sensor Diameter Size					
	mm	(inches)	mm	(inches)	mm	(inches)
Dimension	**1**	**(0.039)**	**2**	**(0.07)**	**4**	**(0.15)**
di	1.1	(0.04)	1.8	(0.07)	3.5	(0.14)
A	32	(1.25)	32	(1.25)	32	(1.25)
B	165	(6.49)	165	(6.49)	195	(7.67)
B1	122	(4.8)	122	(4.8)	132	(5.19)
C	269.5	(10.61)	269.5	(10.61)	279.5	(11.0)
E	120	(4.72)	120	(4.72)	150	(5.9)
F	145	(5.7)	145	(5.7)	175	(6.88)
G	160	(6.29)	160	(6.29)	220	(8.66)
H	301.5	(11.87)	301.5	(11.87)	311.5	(12.26)
K	180	(7.08)	180	(7.08)	240	(9.44)
L	Refer to Process Connections below					
M	228	(8.97)	310	(12.2)	435	(17.1)
N	154	(6.06)	154	(6.06)	1.64	(6.5)
Process Connections L Dimension						
4-VCO-4 fittings L1	290	(11.41)	372	(14.6)	497	(19.56)
½" Tri-Clamp L2	296	(11.65)	378	(14.9)	503	(19.8)
¼" NPT-F L3	361	(14.21)	443	(17.44)	568	(22.36)
SWAGELOK® L4 DN 2 1/8" or 1/4" DN 4 1/4"	359.6	(14.15)	441.6	(17.38)	571.6	(22.5)
½" Flange L5 Cl 150	393	(15.47)	475	(18.7)	600	(23.6)
(ANSI) L6 Cl 300	393	(15.47)	475	(18.7)	600	(23.6)
DN 15 Flange L7 PN 40	393	(15.47)	475	(18.7)	600	(23.6)
(DIN, JIS) L8 10K	393	(15.47)	475	(18.7)	600	(23.6)
	kg	**(lb)**	**kg**	**(lb)**	**kg**	**(lb)**
Weight	10	(22.04)	11	(24.2)	15	(33)

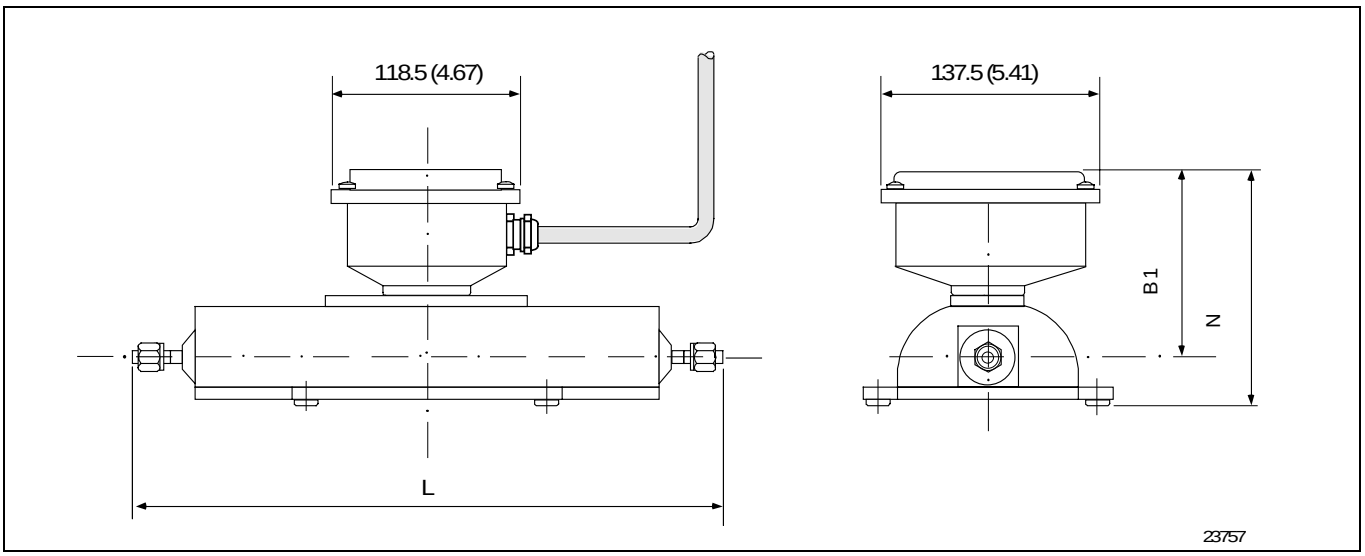


Figure 16 A Series Remote Sensor Dimensions

Wetted Parts Materials

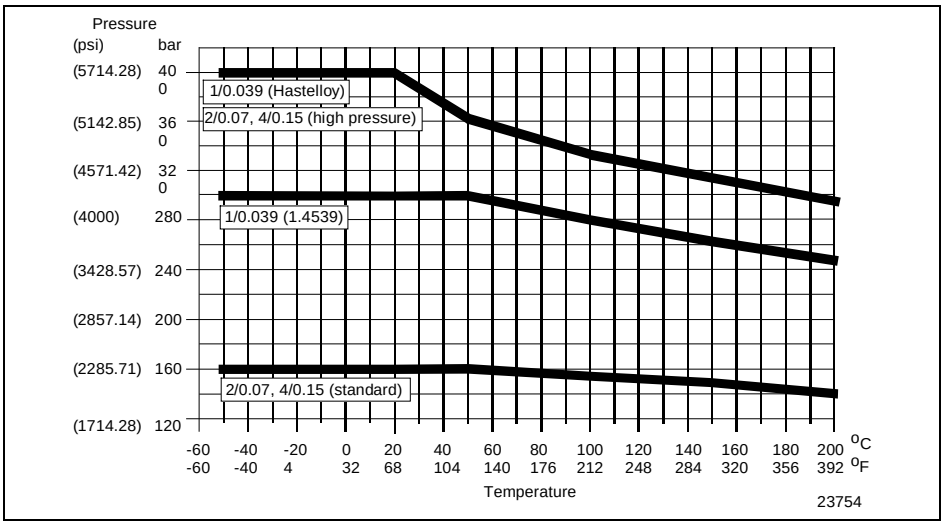
Table 12 Wetted Parts

Measuring pipe 4-VCO-4 fittings 1/2” Tri-Clamp	1.4539 (904L), Hastelloy C-22 1.4539 (904L), Hastelloy C-22 1.4539 (904L)
Adapter sets	
1/8” of 1/4” SWAGELOK®	1.4401 (316)
1/4” NPT-F	1.4402 (904L), Hastelloy C-22
Flange: DIN, ANSI, JIS	1.4403 (904L), Hastelloy C-22 Loose flanges (not wetted) 1.4404/1.4435 (316L)
O-ring	Viton (-15 to +200ºC, [-5 to 392ºF]) EPDM (-40 to +160ºC [-40 to +360ºF]) Silicone (-60 to +200ºC [-76 to +392ºF]) Kalrez (-30 to +210ºC [-22 to +410ºF])

Without Adapter set

- 4-VCO-4 fittings
- 1/2" Tri-Clamp

Tri-Clamp: The material load limit is exclusively determined by the material properties of the Tri-Clamp used. This clamp is not included in the shipment.

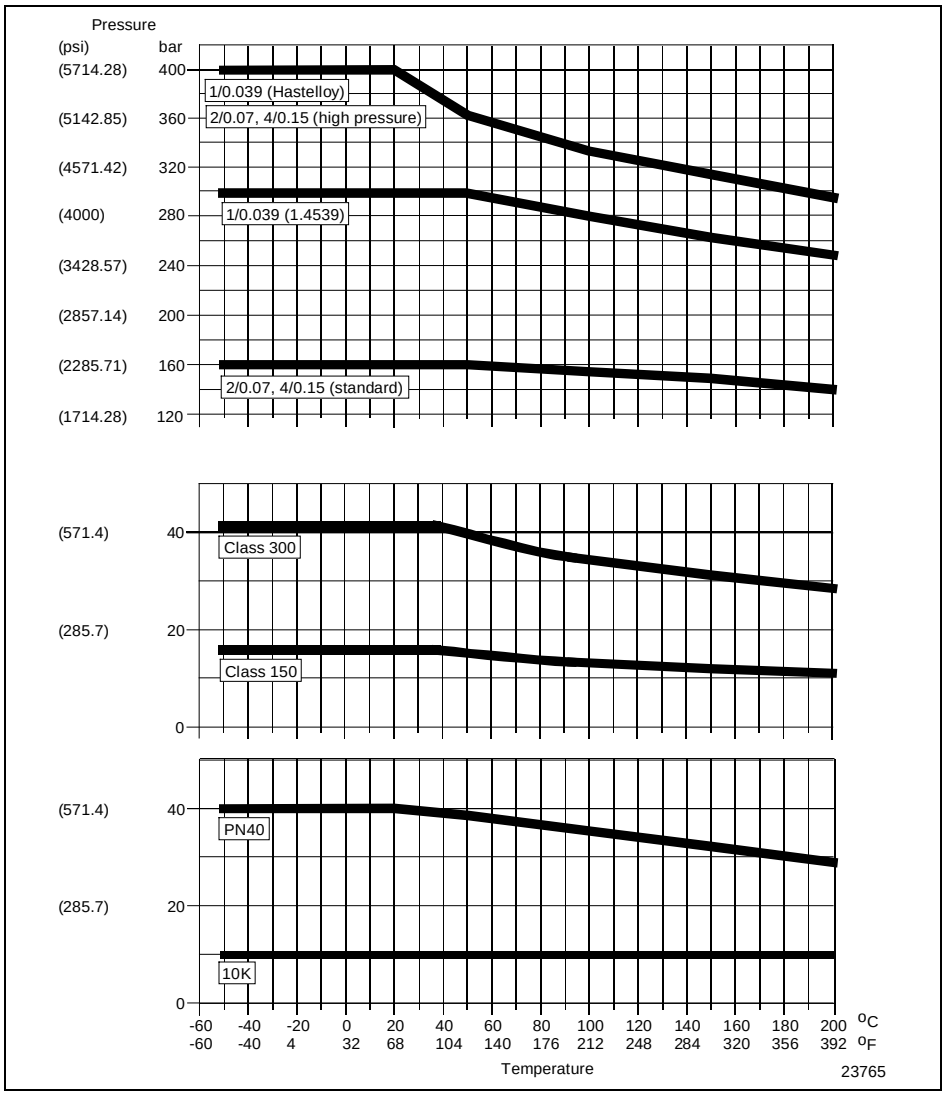


With Adapter Set

- 1/4" NPT-F
- 1/8" or 1/4" SWAGELOK®

Flanges (ANSI, DIN, JIS)*

*With 1/2" or DN 15 (0.5 in) flanges as standard.



Dimensions – M Series and F Series

M Series - 8 to 80 mm (0.31 to 3 in)

F Series - 8 to 50 mm (0.31 to 2 in)

Compact version: Figures 17 and 18, Tables 13 and 14

Remote version: Figure 19, Tables 13 and 14

NOTE: Dimensions for the explosion proof version flowmeters (Ex and FM) are the same as the standard version, except where noted (*).

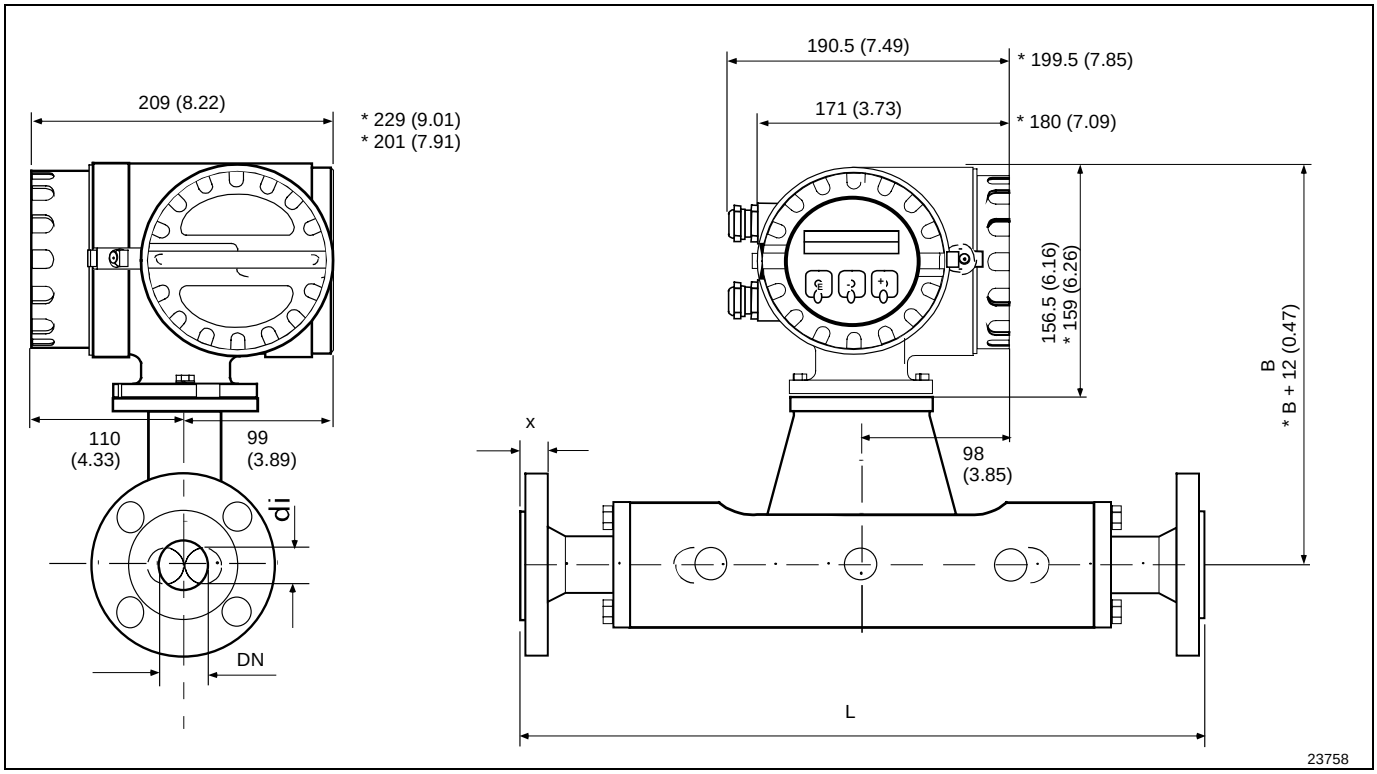


Figure 17 M Series Compact Version Dimensions

Table 13 M Series Compact and Remote Versions

Dimension	Sensor Diameter Size mm (inches)						
	DN 8* (0.31")	**DN 15 (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**	**DN 80 (3")**	**DN 80 w/flange 100 (4")**
L	Dimensions are dependent on the process connections.						
x	See Tables 15 through 20.						
A	75 (2.95)	75 (2.95)	75 (2.95)	105 (4.13)	141 (5.5)	-	-
B	262.5 (10.33)	264.5 (10.41)	268.5 (10.57)	279.5 (11)	289.5 (11.39)	305.5 (12)	305.5 (12)
B1	113.0 (4.44)	114.5 (4.5)	119.0 (4.68)	130.0 (5.11)	140.0 (5.51)	156.0 (6.14)	156.0 (6.14)
di	5.53 (0.22)	8.55 (0.33)	11.38 (0.44)	17.07 (0.67)	25.60 (1.0)	38.46 (1.5)	38.46 (1.5)
Weight kg (lb)	11 (24.2)	12 (26.5)	15 (33)	24 (52.9)	41 (90.4)	67 (147.7)	71 (156.5)

*DN 8 (0.31"): with DN 15 (0.6") flanges as standard.

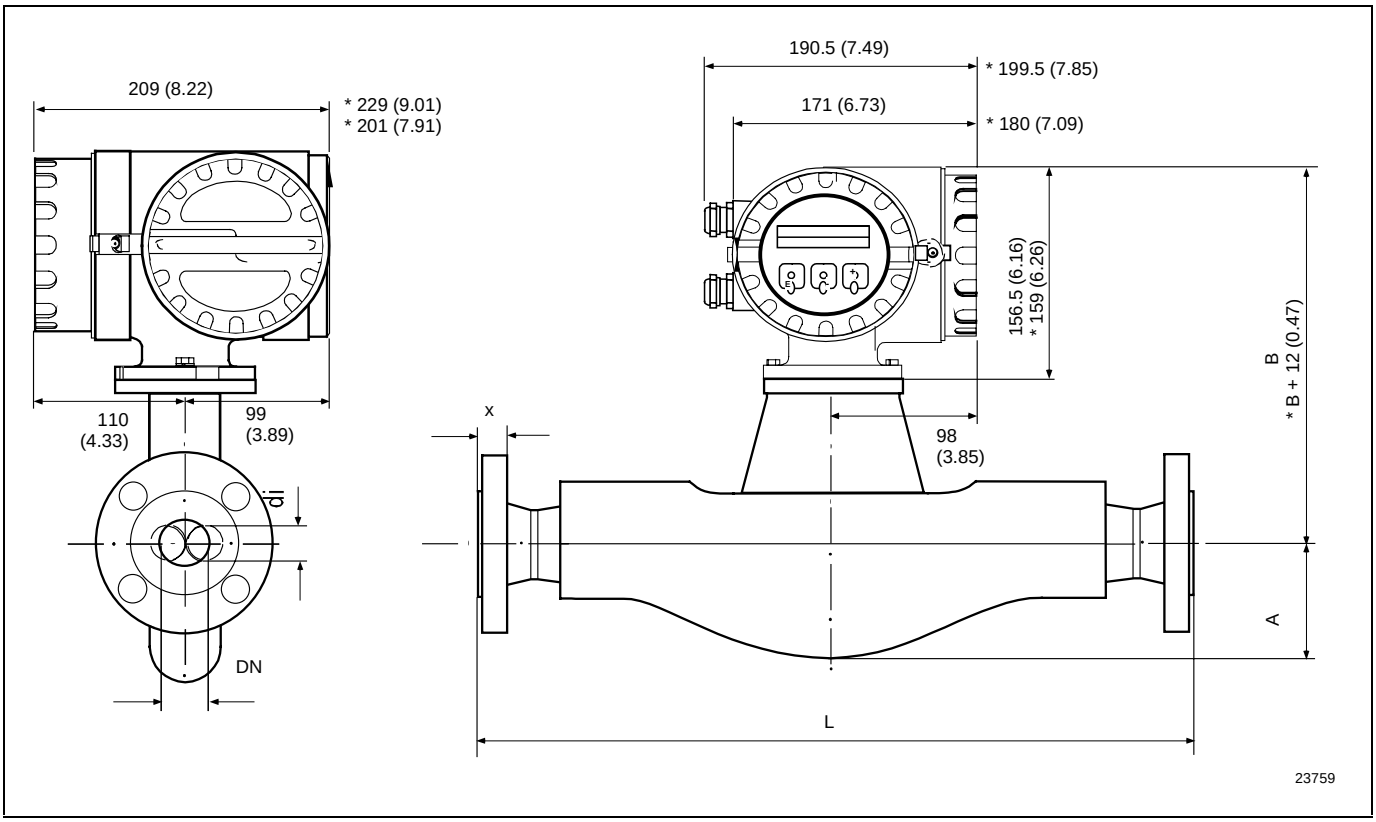


Figure 18 F Series Compact Version Dimensions

Table 14 F Series Compact and Remote Versions

Dimension	Sensor Diameter Size mm (inches)				
	DN 8 (0.31")	**DN 15 (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**
L	Dimensions are dependent on the process connections				
x	See Tables 15 through 20.				
A	75 (2.95)	75 (2.95)	75 (2.95)	105 (4.13)	141 (5.55)
B	262.5 (10.33)	262.5 (10.33)	262.5 (10.33)	267.5 (10.5)	279.5 (11.0)
B1	113.0 (4.44)	113.0 (4.44)	113.0 (4.44)	118.0 (4.64)	130.0 (5.11)
di	5.35 (0.21)	8.30 (0.32)	12.00 (0.47)	17.60 (0.69)	26.00 (1.02)
Weight kg (lb)	11 (24.2)	12 (26.5)	14 (30.8)	19 (41.9)	30 (66.1)

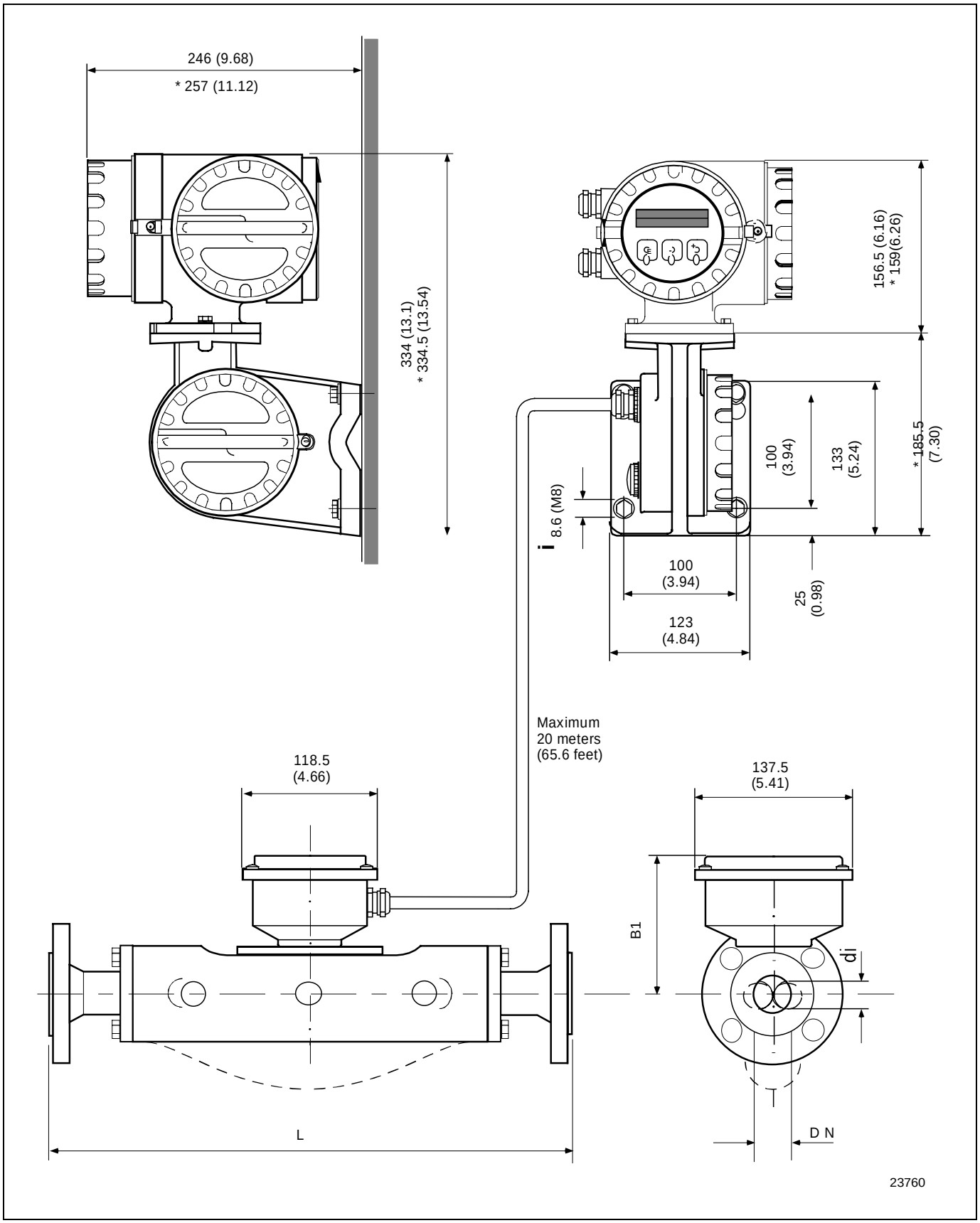


Figure 19 M and F Series Remote Version Dimensions

NOTE: Dimensions for the explosion proof version flowmeters (Ex and FM) are the same as the standard version, except where noted (*).

DIN Process Connections

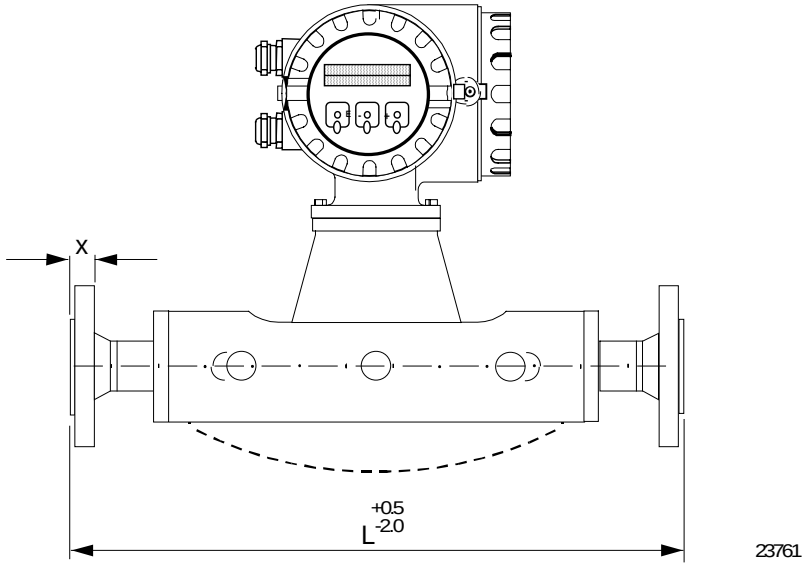
DIN 2501 and DIN 2512 process connections

M Series

Flange material: 1.4404 (316L) stainless steel, titanium Grade 2

Gasket material: O-ring in

- Viton (-15 to +200ºC [-58 to 392ºF])
- Kalrez (-30 to +210ºC [-22 to +410ºF])
- Silicone (-60 to +200ºC [-76 to 392ºF])
- EPDM (-40 to +160ºC [-40 to +320ºF])
- FEP coated (-60 to +200ºC [-76 to +392ºF])



See Table 15

F Series

Wetted parts: stainless steel, Hastelloy C-22

No internal gaskets with welded process connections

Table 15 DIN Process Connections

Dimension		Sensor Diameter Size mm (inches)						
		DN 8* (0.31")	DN 15 (0.6")	DN 25 (1")	DN 40 (1.5")	DN 50 (2")	DN 80** (3")	DN 80 w/100 mm (4") Flange
PN 16	L	-	-	-	-	-	-	874 (34.4)
	x	-	-	-	-	-	-	20 (0.78)
PN 40	L	370 (14.6)	404 (15.9)	440 (17.3)	550 (21.6)	715 (28.1)	840 (33.1)	874 (34.4)
	x	16 (0.63)	16 (0.63)	18 (0.71)	18 (0.71)	20 (0.78)	24 (0.94)	24 (0.94)
PN 64	L	400 (15.7)	420 (16.5)	470 (18.5)	590 (23.2)	724 (28.5)	875 (34.4)	-
	x	20 (0.78)	20 (0.78)	24 (0.94)	26 (1.02)	26 (1.02)	28 (1.10)	-
PN 100	L	400 (15.7)	420 (16.5)	470 (18.5)	590 (23.2)	740 (29.1)	885 (34.8)	-
	x	20 (0.78)	20 (0.78)	24 (0.94)	26 (1.02)	28 (1.10)	32 (1.25)	-

*DN 8 (0.31"): with DN 15 (0.6") flanges as standard.
**DN 80 (3"): only available for M Series.

ANSI Process Connections

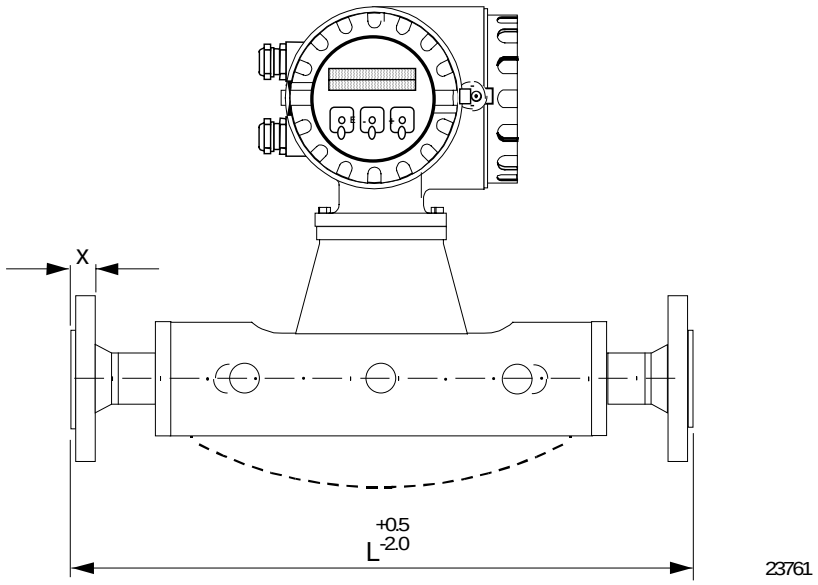
ANSI B16.5 process connections

M Series

Flange material: 1.4404 (316L) stainless steel, titanium Grade 2

Gasket material: O-ring in

- Viton (-15 to +200ºC [-58 to 392ºF])
- Kalrez (-30 to +210ºC [-22 to +410ºF])
- Silicone (-60 to +200ºC [-76 to 392ºF])
- EPDM (-40 to +160ºC [-40 to +320ºF])
- FEP coated (-60 to +200ºC [-76 to +392ºF])



See Table 16

F Series

Wetted parts: stainless steel, Hastelloy C-22

No internal gaskets with welded process connections

Table 16 ANSI Process Connections

Sensor ⇒ DIN (ANSI) / Dimension ⇓		Sensor Diameter Size mm (inches)						
		DN 8* (0.31")	DN 15 (0.6")	DN 25 (1")	DN 40 (1.5")	DN 50 (2")	DN 80** (3")	DN 80 w/100 mm (4") Flange
Cl 150	L	370 (14.6)	404 (15.9)	440 (17.3)	550 (21.6)	715 (28.1)	840 (33.1)	874 (34.4)
	x	11.2 (0.44)	11.2 (0.44)	14.2 (0.56)	17.5 (0.69)	19.1 (0.75)	23.9 (0.94)	23.9 (0.94)
Cl 300	L	370 (14.6)	404 (15.9)	440 (17.3)	550 (21.6)	715 (28.1)	840 (33.1)	894 (35.1)
	x	14.2 (0.56)	14.2 (0.56)	17.5 (0.69)	20.6 (0.81)	22.3 (0.88)	28.4 (1.11)	31.7 (1.25)
Cl 600	L	400 (15.7)	420 (16.5)	490 (19.3)	600 (23.6)	742 (29.2)	900 (35.4)	-
	x	20.6 (0.81)	20.6 (0.81)	23.9 (0.94)	28.7 (1.13)	31.8 (1.25)	38.2 (1.50)	-

*DN 8 (0.31"): with DN 15 (0.6") flanges as standard.
**DN 80 (3"): only available for M Series.

JIS Process Connections

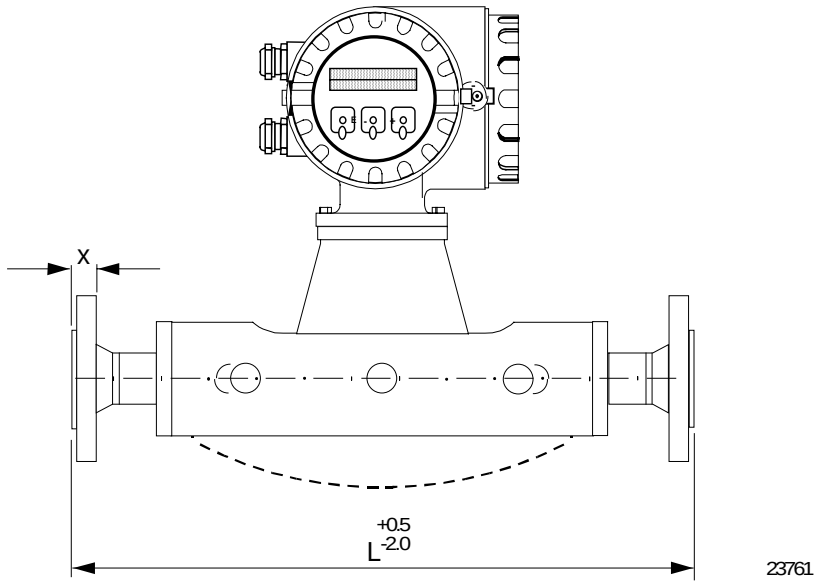
JIS B2210 process connections

M Series

Flange material: 1.4404 (316L) stainless steel, titanium Grade 2

Gasket material: O-ring in

- Viton (-15 to +200ºC [-58 to 392ºF])
- Kalrez (-30 to +210ºC [-22 to +410ºF])
- Silicone (-60 to +200ºC [-76 to 392ºF])
- EPDM (-40 to +160ºC [-40 to +320ºF])
- FEP coated (-60 to +200ºC [-76 to +392ºF])



See Table 17

F Series

Wetted parts: stainless steel, Hastelloy C-22

No internal gaskets with welded process connections

Table 17 JIS Process Connections

Dimension		Sensor Diameter Size mm (inches)						
		DN 8* (0.31")	**DN 15 (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**	**DN 80** (3")**	**DN 80 w/100 mm (4") Flange**
10K	L	-	-	-	-	715 (28.1)	832 (32.7)	864 (34.1)
	x	-	-	-	-	16 (0.63)	18 (0.71)	18 (0.71)
20K	L	370 (14.6)	404 (15.9)	440 (17.3)	550 (21.6)	715 (28.1)	832 (32.7)	-
	x	14 (0.55)	14 (0.55)	16 (0.62)	18 (0.70)	18 (0.70)	22 (0.86)	-
40K	L	400 (15.7)	425(16.7)	485 (19.1)	600 (23.6)	760 (29.9)	890 (35.0)	-
	x	20 (0.78)	20 (0.78)	22 (0.86)	24 (0.94)	26 (1.01)	32 (1.25)	-
63K	L	420 (16.5)	440 (17.3)	494 (19.4)	620 (24.4)	775 (30.5)	915 (36.0)	-
	x	23 (0.90)	23 (0.90)	27 (1.06)	32 (1.25)	34 (1.33)	40 (1.57)	-

*DN 8 (0.31"): with DN 15 (0.6") flanges as standard.
**DN 80 (3"): only available for M Series.

PVDF Process Connections

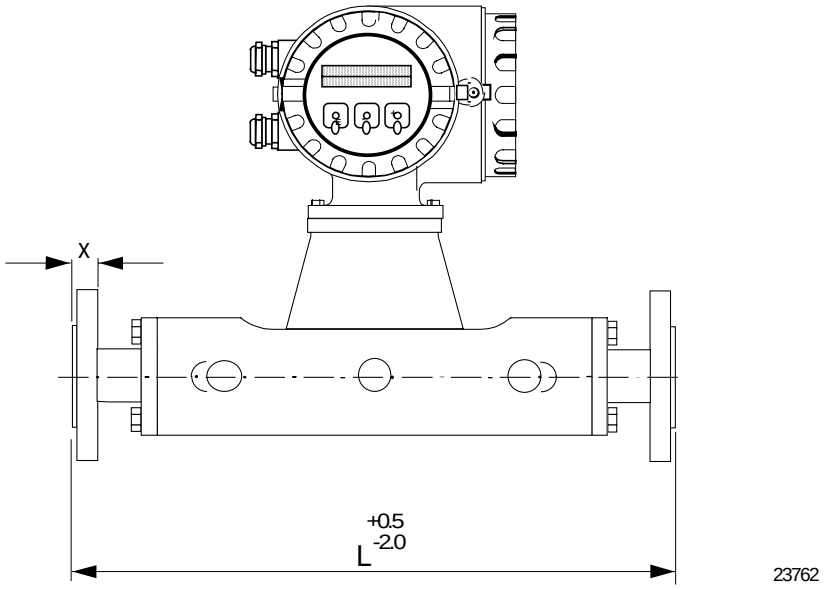
PVDF process connections (DIN 2501/ANSI B16.5/JIS B2210*)*

M Series

Flange material: PVDF

Gasket material: O-ring in

- Viton (-15 to +200ºC [-58 to 392ºF])
- Kalrez (-30 to +210ºC [-22 to +410ºF])
- Silicone (-60 to +200ºC [-76 to 392ºF])
- EPDM (-40 to +160ºC [-40 to +320ºF])
- FEP coated (-60 to 200ºC [-76 to 392ºF])



See Table 18

Table 18 PVDF Process Connections

Sensor ⇒ DIN (ANSI) / Dimension ⇓	Sensor Diameter Size mm (inches)				
	DN 8* (0.31")	**DN 15 (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**
PN16 / Cl 150 / 10K					
L	370 (14.6)	404 (15.9)	440 (17.3)	550 (21.6)	715 (28.1)
x	16 (0.63)	16 (0.63)	18 (0.71)	21 (0.83)	22 (0.86)

*DN 8 (0.31"): instrument fitted with DN 15 (1/2") flanges.

Sanitary Process Connections

Hygienic coupling DIN 11851/ SMS 1145

M Series

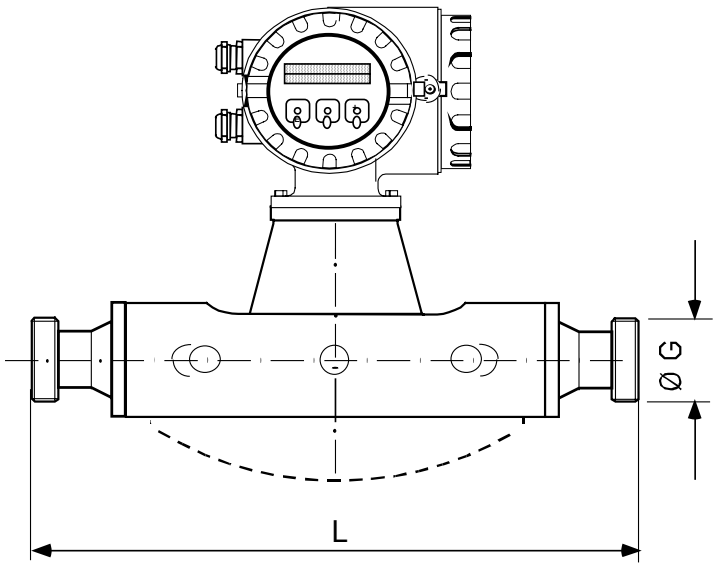
Flange material: 1.4404 (316L) stainless steel

Gasket material:

- Silicone flat gasket (-60 to +200ºC [-76 to 392ºF])
- EDPM (-40 to +160ºC [-40 to +320ºV]), FDA licensed material

F Series

No internal gaskets

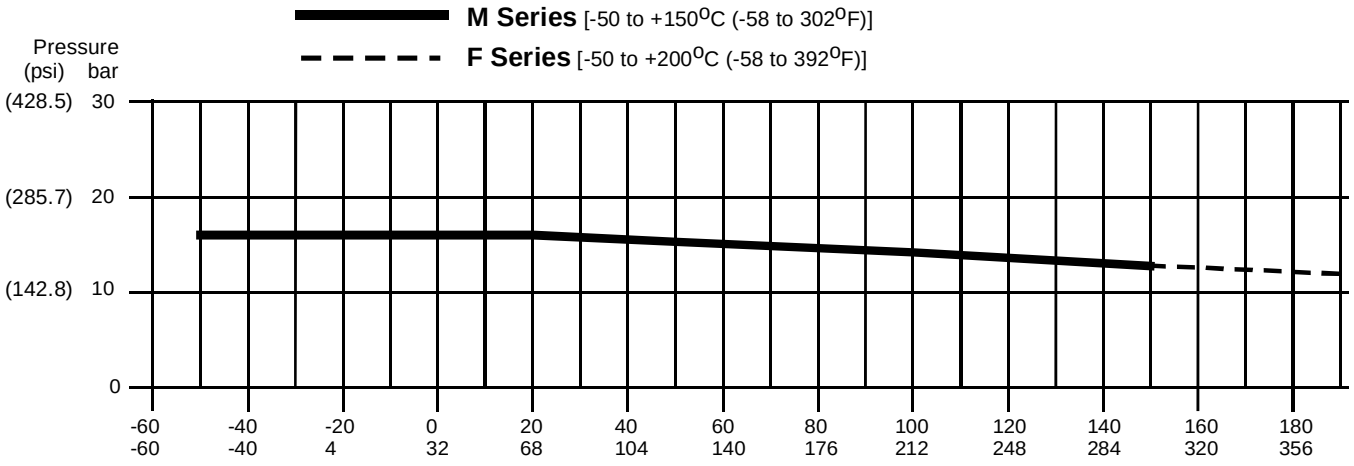


See Table 19

Table 19 Sanitary Process Connections

Sensor ⇒ DIN (ANSI) ⇓ Dimension	Sensor Diameter Size mm (inches)					
	DN 8* (0.31")	**DN 15 (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**	**DN 80 (3")**
L mm (inches)	367 (14.4)	398 (15.6)	434 (17.1)	560 (22.0)	720 (28.3)	815 (32.0) (DIN) 792 (31.2) (SMS)
Ø G DIN 11851	Rd 34 x 1/8"	Rd 34 x 1/8"	Rd 52 x 1/6"	Rd 65 x 1/6"	Rd 78 x 1/6"	Rd 110 x 1/4"
Ø G SMS 1145	Rd 40 x 1/6"	Rd 40 x 1/6"	Rd 40 x 1/6"	Rd 60 x 1/6"	Rd 70 x 1/6"	Rd 98 x 1/6"

*DN 8 (0.31"): instrument fitted with DN 15 (1/2") flanges.



Pressure limitations due to fluid temperature

Tri-Clamp Process Connections

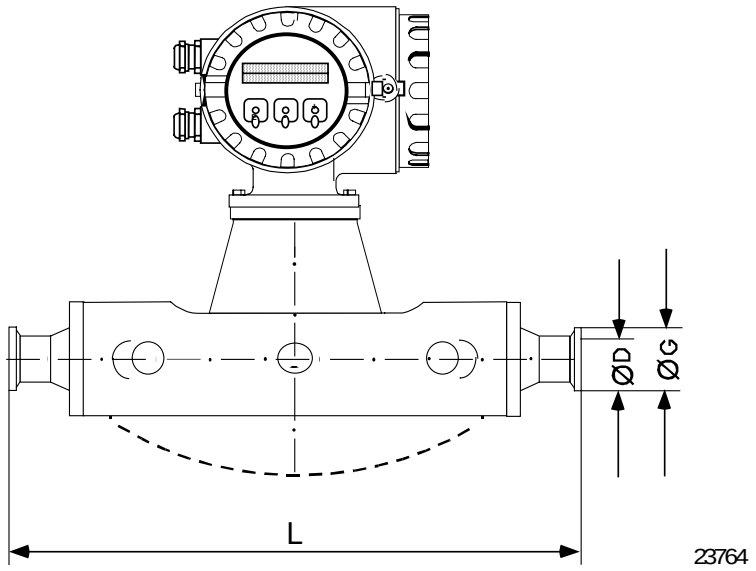
Flange material: 1.4404 (316L) stainless steel

Gasket material:

- Silicone flat gasket (-60 to +200ºC [-76 to 392ºF])
- EDPM (-40 to +160ºC [-40 to +320ºV]), FDA licensed material

(*F Series:* No internal gaskets)

No mating ferrule provided



See Table 20

Table 20 Tri-Clamp Process Connections

Sensor ⇒ DIN (ANSI) ⇓ Dimension	Sensor Diameter Size mm (inches)					
	DN 8* (0.31")	**DN 15* (0.6")**	**DN 25 (1")**	**DN 40 (1.5")**	**DN 50 (2")**	**DN 80** (3")**
L mm (inches)	367 (14.4)	398 (15.6)	434 (17.1)	560 (22.0)	720 (28.3)	801 (31.5)
Ø G	50.4 (1.98)	50.4 (1.98)	50.4 (1.98)	50.4 (1.98)	63.9 (2.51)	90.9 (3.58)
Ø D	22.1 (0.87)	22.1 (0.87)	22.1 (0.87)	34.8 (1.37)	47.5 1.87)	72.9 (2.87)

*0.31" and 0.6": with 1" connections as standard.
**DN 80: only available for M Series.

Pressure limitations due to fluid temperature

The material load limit is exclusively determined by the material properties of the Tri-Clamp used. This clamp is not included in the shipment.

Ordering Information

Refer to the following model selection guides to build the appropriate model numbers for the SCM 3000 ***PLUS*** components that you need to meet your application requirements.

Honeywell

SCM 3000 PLUS A Series

Model Selection Guide

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers I

_ _ _ _ _ _ - _ _ _ _ _ _ _ _ _ _ _

KEY NUMBER **Selection** **Availability** *** = Stocked**

Sizes, Tube Material and Approximate Flowrates							
DN 1mm (1/24") 1.4539/904L Measurement Tube Flowrate: 0-1 kg/h up to 0-20 kg/h 0-45 lbs/h up to 0-100 lbs/h	CMAS01	↓					
DN 1mm (1/24") 1.4539/904L Measurement Tube Flowrate: 0-1 kg/h up to 0-20 kg/h 0-45 lbs/h up to 0-100 lbs/h	CMAC01		↓				
DN 2mm (1/12") 1.4539/904L Measurement Tube Flowrate: 0-5 kg/h up to 0-100 kg/h 0-11 lbs/h up to 0-220 lbs/h	CMAS02			↓			
DN 2mm (1/12") Hastelloy C22 Measurement Tube Flowrate: 0-5 kg/h up to 0-100 kg/h 0-11 lbs/h upto 0-220 lbs/h	CMAC02				↓		
DN 4mm (1/8") 1.4539/904L Measurement Tube Flowrate: 0-22.5 kg/h up to 0-450 kg/h 0-49.5 lbs/h up to 0-990 lbs/h	CMAS04					↓	
DN-4mm (1/8) Hastelloy C22 Measurement Tube Flowrate: 0-22.5 kg/h upto 0-450 kg/h 0-49.5 lbs/h up to 0-990 lbs/h	CMAC04						↓

TABLE I

A - Process Connections								Note 1
Cajon 4-VCO-4 Couplings	SVW_ _ _ _ _ _ _ _	•	•	•	•	•	•	*
High Pressure Version, Cajon 4-VCO-4 Couplings (not for Hastelloy C22 measurement tubes)	PVW_ _ _ _ _ _ _ _			•		•		
High Pressure Version, 0.4um/240 grit surface, Cajon 4-VCO-4 Couplings (not for Hastelloy C22 measurement tubes)	PPW_ _ _ _ _ _ _ _			•		•		
1/2" TriClamp Couplings, 3-A (not for C22 measurement tubes)	STW_ _ _ _ _ _ _ _	•		•		•		
1/2" TriClamp Couplings, 0.4um/240 grit surface, 3-A Author.Version (not for Hastelloy C22 measurement tubes)	SPW_ _ _ _ _ _ _ _	•		•		•		
Other	999 _ _ _ _ _ _ _ _	•	•	•	•	•	•	

Note 1: Refer to 34-CM-16-07 for Adapter Sets and Pipe Mounting Kits.

TABLE I, continued

	CMA_ _ _	Availability S001	C001	S002	C002	S004	C004	
B-Construction Certificates/Secondary Containment								
25bar (365 psi) Secondary Containment	_ _ _ 0 _ _ _ _ _ _ _	•	•	•	•	•	•	*
3.1B Version, 25bar Containment with Pressure Test Certificate	_ _ _ 1 _ _ _ _ _ _ _	•	•	•	•	•	•	
25bar (365 psi) Containment with Purge Connections with Pressure Test Certificate	_ _ _ 2 _ _ _ _ _ _ _	•	•	•	•	•	•	
Containment with Purge Connections, 3.1B Version, 25bar (365 psi) Containment,Pressure Certificate	_ _ _ 3 _ _ _ _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ 9 _ _ _ _ _ _ _	•	•	•	•	•	•	
C - Calibration								
0.1% Flow Calibration; 2% Density Calibration	_ _ _ _ 0 _ _ _ _ _ _	•	•	•	•	•	•	*
0.1% Flow Calibration, 0.2% Density Calibration (specify density/temperature range)	_ _ _ _ 1 _ _ _ _ _ _	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration; 2% Density Calibration (specify calibration range)	_ _ _ _ 2 _ _ _ _ _ _	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration, 0.2% Density Calibration (specify calibration and density/ temperature range)	_ _ _ _ 3 _ _ _ _ _ _	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 2% Density (EAL,EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify calibration range)	_ _ _ _ A _ _ _ _ _ _	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 0.2% Density (EAL, EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify calibration and density temperature range)	_ _ _ _ B _ _ _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ 9 _ _ _ _ _ _	•	•	•	•	•	•	
D - Enclosure Protection Rating and Cable								
IP67/NEMA 4X Compact Version	_ _ _ _ _ A _ _ _ _ _	•	•	•	•	•	•	*
IP67/NEMA 4X Remote Version, 10m (30 ft) of cable included	_ _ _ _ _ B _ _ _ _ _	•	•	•	•	•	•	
IP67/NEMA 4X remote Version, 20m (60 ft)of cable included	_ _ _ _ _ C _ _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ _ 9 _ _ _ _ _	•	•	•	•	•	•	
E - Cable Glands								
PG 13.5 Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 0 _ _ _ _	•	•	•	•	•	•	
M20 X 1.5 Threads for Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 1 _ _ _ _	•	•	•	•	•	•	
NPT 1/2" Threads for Cable Glands	_ _ _ _ _ _ 2 _ _ _ _	•	•	•	•	•	•	*
G 1/2" Threads for Cable Glands	_ _ _ _ _ _ 3 _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ _ _ 9 _ _ _ _	•	•	•	•	•	•	
F - Safety Approvals								
CENELEC: EEx de/EEx d ib II C T2-T6	_ _ _ _ _ _ _ 3 _ _ _	•	•	•	•	•	•	
FM: NI/I/2/ABCD/DIP/II,III/1/EFG	_ _ _ _ _ _ _ 5 _ _ _	c	c	c	c	c	c	*
FM: XP/I/2/ABCD/DIP/II,III/1/EFG	_ _ _ _ _ _ _ 6 _ _ _	c	c	c	c	c	c	
CSA: Class I, DIv 2, ABCD	_ _ _ _ _ _ _ A _ _ _	c	c	c	c	c	c	
CSA: Class I, Div 1, ABCD	_ _ _ _ _ _ _ B _ _ _	c	c	c	c	c	c	
Other	_ _ _ _ _ _ _ 9 _ _ _	•	•	•	•	•	•	

CMA_ _ _

Availability

TABLE I, continued

		S 0 1	C 0 1	S 0 2	C 0 2	S 0 4	C 0 4	
G - Display/Programming								
No Display/HART	_ _ _ _ _ _ _ _ A _ _	•	•	•	•	•	•	
Display with Touch Control	_ _ _ _ _ _ _ _ B _ _	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ 9 _ _	•	•	•	•	•	•	
H - Power Supply								
85-260 VAC, 50/60 Hz Power Supply	_ _ _ _ _ _ _ _ _ 1 _	•	•	•	•	•	•	*
20-55 VAC, 16-62 VDC Power Supply	_ _ _ _ _ _ _ _ _ 2 _	•	•	•	•	•	•	
Other	_ _ _ _ _ _ _ _ _ 9 _	•	•	•	•	•	•	
I - Signal Outputs								
HART Current and Frequency Output	_ _ _ _ _ _ _ _ _ _ A	•	•	•	•	•	•	
RS485 and Current Output	_ _ _ _ _ _ _ _ _ _ B	•	•	•	•	•	•	
RS485 and Frequency Output	_ _ _ _ _ _ _ _ _ _ C	•	•	•	•	•	•	
Auxiliary Input and Current Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ D	**d**	**d**	**d**	**d**	**d**	**d**	
Auxiliary Input and Frequency Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ E	**d**	**d**	**d**	**d**	**d**	**d**	
HART Current and 2nd Current Output	_ _ _ _ _ _ _ _ _ _ F	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ _ _ 9	•	•	•	•	•	•	

RESTRICTIONS

Restriction Letter	Not Available With	
	Table	**Selection**
c	**I**	_ _ _ _ _ _ 0 _ _ _ _, _ _ _ _ _ _ 1 _ _ _ _
d	**I**	_ _ _ _ _ _ _ _ A _ _

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SCM 3000 PLUS Model Selection Guide
Adapter Sets & Pipe Mounting Kits
A Series

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers ____ I ____
[_ _ _ _ _ _] - [_ _ _ _ _]

Adapter Sets for SCM 3000 PLUS A Series	Selection	Availability	
Key Number - CMDK3A			
Mounting Kits for DN 1 (1/24") and DN 2 (1/12")	2 _ _ _ _	↓	
Mounting Kits for DN 4 (1/8")	4 _ _ _ _		↓

TABLE I

Process Connections			
1/4" NPTSS -F	_ A1 _ _	•	•
1/4" NPT Hast C22 -F	_ A2 _ _	•	•
1/8" Swagelok SS (for DN2 only) 316	_ B3 _ _	•	•
1/4" Swagelok 316	_ C3 _ _	•	•
PN 40 DN15 DIN2501 SS	_ D1 _ _	•	•
PN 40 DN15 DIN2501 Hast C22	_ D2 _ _	•	•
PN 40 DN15 DIN2501 SS	_ E1 _ _	•	•
PN 40 DN15 DIN2501 SS	_ E2 _ _	•	•
ANSI CL 150 SS	_ F1 _ _	•	•
ANSI CL 150 HAST C22	_ F2 _ _	•	•
ANSI CL 300 SS	_ G1 _ _	•	•
ANSI CL 300 Hast C22	_ G2 _ _	•	•
JIS 10K SS	_ H1 _ _	•	•
JIS 10K Hast C	_ H2 _ _	•	•
Other	_ 99 _ _	•	•
Certificates			
Without	_ _ _ A _	•	•
3.1B for Wetted Metal Parts	_ _ _ B _	•	•
Other	_ _ _ 9 _	•	•
Seals			
Viton	_ _ _ _ 1	•	•
EDPM	_ _ _ _ 2	•	•
Silicone	_ _ _ _ 3	•	•
Kalrez	_ _ _ _ 4	•	•
Other	_ _ _ _ 9	•	•

Pipe Mounting Kits	Honeywell Part Numbers
For DN 1 (1/24") and 2 (1/12")	51SCMACSS001
For DN 4 (1/8")	51SCMACSS002
For Remote Transmitter	51SCMACSS003

Honeywell

SCM 3000 PLUS F Series

Model Selection Guide

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers I

_ _ _ _ _ _ - _ _ _ _ _ _ _ _ _ _ _

* = Stocked

KEY NUMBER Sizes, Tube Material and Approximate Flowrates	Selection	Availability									
DN 8mm (3/8") 1.4539/904L Measurement Tube Flowrate:: 0-0.1 t/h up to 0-2.0 t/h Flowrate: 0-220 lbs/h up to 4400 lbs/h	CMFS08	↓									*
DN 8mm (3/8") Hastelloy C22 Measurement Tube Flowrate: 0-0.1 t/h up to 0-2.0 t/h Flowrate: 0-220 lbs/h up to 4400 lbs/h	CMFC08		↓								
DN 15mm (1/2") 1.4539/904L Measurement Tube Flowrate: 0-0.3 t/h up to 0-6.5 t/h Flowrate: 0-660 lbs/h up to 14,300 lbs/h	CMFS15			↓							*
DN 15mm (1/2") Hastelloy C22 Measurement Tube Flowrate: 0-0.3 t/h upto 0-6.5 t/h Flowrate: 0-660 lbs/h up to 14,300 lbs/h	CMFC15				↓						
DN 25mm (1") 1.4539/904L Measurement Tube Flowrate: 0-0.9 t/h up to 0-18.0 t/h Flowrate: 0-1980 lbs/h up to 0-39,600 lbs/h	CMFS25					↓					*
DN 25mm (1") Hastelloy C22 Measurement Tube Flowrate: 0-0.9 t/h up to 0-18.0 t/h Flowrate: 0-1980 lbs/h up to 0-39,600 lbs/h	CMFC25						↓				
DN 40mm (1 1/2") 1.4539/904L Measurement Tube Flowrate: 0-2.25 t/h up to 0-45.0 t/h Flowrate: 0-4950 lbs/h up to 0-99,000 lbs/hr	CMFS40							↓			*
DN 40mm (1 1/2") Hastelloy C22 Measurement Tube Flowrate: 0-2.25 t/h up to 0-45.0 t/h Flowrate: 0-4950 lbs/h up to 0-99,000 lbs/hr	CMFC40								↓		
DN 50mm (2") 1.4539/904L Measurement Tube Flowrate: 0-3.5 t/h up to 0-70.0 t/h Flowrate: 0-7700 lb/h up to 0-154,000 lbs/h	CMFS50									↓	*
DN 50mm (2") Hastelloy C22 Measurement Tube Flowrate: 0-3.5 t/h up to 0-70.0 t/h Flowrate: 0-7700 lb/h up to 0-154,000 lbs/h	CMFC50										↓

TABLE I

	CMF_ _ _	Availability									
		S 0 8	C 0 8	S 1 5	C 1 5	S 2 5	C 2 5	S 4 0	C 4 0	S 5 0	C 5 0
A - Process Connections **Note 1**											
PN40 DIN2501 Flanges	D2W _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
PN64 DIN2501 Flanges (only for DN 50-2")	D3W _ _ _ _ _ _ _ _									•	•
PN100 DIN2501 Flanges	D4W _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
PN40 DIN2512N Flanges	D6W _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
PN64 DIN2512N Flanges (only for DN 50-2")	D7W _ _ _ _ _ _ _ _									•	•
PN100 DIN2512N Flanges	D8W _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
Cl 150 ANSI B16.5 Flanges	AAW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	• *
Cl 300 ANSI B16.5 Flanges	ABW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
Cl 600 ANSI B16.5 Flanges	ACW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
10K JIS B2210 Flanges (only for DN 50-2")	NDW _ _ _ _ _ _ _ _									•	•
20K JIS B2210 Flanges	NEW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
40K JIS B2210 Flanges	NGW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
63K JIS B2210 Flanges	NHW _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
8-VCO-4 (1/2") Couplings (only for DN 8-0.3", 1.4539/904L measurement tubes)	CVW _ _ _ _ _ _ _ _	•									
12-VCO-4 (3/4") Couplings (only for DN 15-0.5", 1.4539/904L measurement tubes)	CWW_ _ _ _ _ _ _ _			•							
TriClamp Couplings (only for 1.4539/904L measurement tubes)	FTW _ _ _ _ _ _ _ _	•		•		•		•		•	
1/2" TriClamp Couplings (only for DN 8-15-0.3"-0.5", 1.4539/904L measurement tubes)	FUW _ _ _ _ _ _ _ _	•		•							
PN16 DIN11851 Couplings (only for 1.4539/904L measurement tubes)	FMW _ _ _ _ _ _ _ _	•		•		•		•		•	
PN16 SMS1145 Couplings (only for 1.4539/904L measurement tubes)	FSW _ _ _ _ _ _ _ _	•		•		•		•		•	
TriClamp Couplings, 3-A (only for 1.4539/904L measurement tubes)	FTA _ _ _ _ _ _ _ _	•				•		•		•	
1/2" TriClamp Couplings, 3-A (only for DN15-.5", 1.4539/904L measurement tubes)	FUA _ _ _ _ _ _ _ _			•							
PN16 DIN11851 Couplings, 3-A (only for 1.4539/904L measurement tubes)	FMA _ _ _ _ _ _ _ _	•		•		•		•		•	
PN16 SMS1145 Couplings, 3-A (only for 1.4539/904L measurement tubes)	FSA _ _ _ _ _ _ _ _	•		•		•		•		•	
Other	999 _ _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
B-Construction Certificates/Secondary Containment											
25bar (365 psi) Secondary Containment	_ _ _ 0 _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	• *
40bar (584 psi) Secondary Containment with Pressure Test Certificate	_ _ _ 2 _ _ _ _ _ _ _		•		•		•		•		•
40bar (584 psi) Secondary Containment with Purge Connections and Pressure Test Certificate	_ _ _ 3 _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•
3.1B Version, 40bar (584 psi) Secondary Contrainment with Pressure Test Certificate (not for sanitary couplings)	_ _ _ 4 _ _ _ _ _ _ _	c	c	c	c	c	c	c	c	c	c
Containment with Purge Connections, 3.1B Version 40bar (584 psi) Secondary Containment, Pressure Certificate (not for sanitary couplings)	_ _ _ 5 _ _ _ _ _ _ _	c	c	c	c	c	c	c	c	c	c
Other	_ _ _ 9 _ _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•

Note 1: Process connection material determined by measuring tube material.

TABLE I, continued

	CMF_ _ _	Availability										
		S 0 8	C 0 8	S 1 5	C 1 5	S 2 5	C 2 5	S 4 0	C 4 0	S 5 0	C 5 0	
C - Calibration												
0.1% Flow Calibration; 1% Density Calibration	_ _ _ _ 0 _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	*
0.1% Flow Calibration, 0.1% Density Calibration (specify density/temperature range)	_ _ _ _ 1 _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration; 1% Density Calibration (specify calibration range)	_ _ _ _ 2 _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration, 0.1% Density Calibration (specify calibration and density temperature range)	_ _ _ _ 3 _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 1% Density (EAL,EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify ccustomers flow range)	_ _ _ _ A _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 0.1% Density (EAL, EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify ranges for massflow, density and temperature)	_ _ _ _ B _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
Other	_ _ _ _ 9 _ _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
D - Enclosure Protection Rating and Cable												
IP67/NEMA 4X Compact Version	_ _ _ _ _ A _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	*
IP67/NEMA 4X Remote Version, 10m (30 ft) of cable included	_ _ _ _ _ B _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
IP67/NEMA 4X remote Version, 20m (60 ft) of cable included	_ _ _ _ _ C _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
Other	_ _ _ _ _ 9 _ _ _ _ _	•	•	•	•	•	•	•	•	•	•	
E - Cable Glands												
PG 13.5 Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 0 _ _ _ _	•	•	•	•	•	•	•	•	•	•	
M20 X 1.5 Threads for Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 1 _ _ _ _	•	•	•	•	•	•	•	•	•	•	
NPT 1/2" Threads for Cable Glands	_ _ _ _ _ _ 2 _ _ _ _	•	•	•	•	•	•	•	•	•	•	*
G 1/2" Threads for Cable Glands	_ _ _ _ _ _ 3 _ _ _ _	•	•	•	•	•	•	•	•	•	•	
Other	_ _ _ _ _ _ 9 _ _ _ _	•	•	•	•	•	•	•	•	•	•	
F - Safety Approvals												
CENELEC: EEx de/EEx dib II C T2-T6	_ _ _ _ _ _ _ 3 _ _ _	•	•	•	•	•	•	•	•	•	•	
FM: NI/I/2/ABCD/DIP/II,III/1/EFG	_ _ _ _ _ _ _ 5 _ _ _	d	d	d	d	d	d	d	d	d	d	*
FM: XP/I/1/ABCD/DIP/II,III/1/EFG	_ _ _ _ _ _ _ 6 _ _ _	d	d	d	d	d	d	d	d	d	d	
CSA: Class I, DIv 2, ABCD	_ _ _ _ _ _ _ A _ _ _	d	d	d	d	d	d	d	d	d	d	
CSA: Class I, Div 1, ABCD	_ _ _ _ _ _ _ B _ _ _	d	d	d	d	d	d	d	d	d	d	
Other	_ _ _ _ _ _ _ 9 _ _ _	•	•	•	•	•	•	•	•	•	•	

TABLE I, continued

	CMF_ _ _	Availability										
		S08	C08	S15	C15	S25	C25	S40	C40	S50	C50	
G - Display/Programming												
No Display/HART	_ _ _ _ _ _ _ _ A _ _	•	•	•	•	•	•	•	•	•	•	
Display with Touch Control	_ _ _ _ _ _ _ _ B _ _	•	•	•	•	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ 9 _ _	•	•	•	•	•	•	•	•	•	•	
H - Power Supply												
85-260 VAC, 50/60 Hz Power Supply	_ _ _ _ _ _ _ _ _ 1 _	•	•	•	•	•	•	•	•	•	•	*
20-55 VAC, 16-62 VDC Power Supply	_ _ _ _ _ _ _ _ _ 2 _	•	•	•	•	•	•	•	•	•	•	
Other	_ _ _ _ _ _ _ _ _ 9 _	•	•	•	•	•	•	•	•	•	•	
I - SIgnal Outputs												
HART Current and Frequency Output	_ _ _ _ _ _ _ _ _ _ A	•	•	•	•	•	•	•	•	•	•	
RS485 and Current Output	_ _ _ _ _ _ _ _ _ _ B	•	•	•	•	•	•	•	•	•	•	
RS485 and Frequency Output	_ _ _ _ _ _ _ _ _ _ C	•	•	•	•	•	•	•	•	•	•	
Auxiliary Input and Current Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ D	e	e	e	e	e	e	e	e	e	e	
Auxiliary Input and Frequency Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ E	e	e	e	e	e	e	e	e	e	e	
HART Current and 2nd Current Output	_ _ _ _ _ _ _ _ _ _ F	•	•	•	•	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ _ _ 9	•	•	•	•	•	•	•	•	•	•	

RESTRICTIONS

Restriction Letter	Not Available With	
	Table	Selection
c	1	CVW _ _ _ _ _ _ _ _, CWW _ _ _ _ _ _ _ _, FTW _ _ _ _ _ _ _ _, FUW _ _ _ _ _ _ _ _, FMW _ _ _ _ _ _ _ _, FSW _ _ _ _ _ _ _ _, FTA _ _ _ _ _ _ _ _, FUA _ _ _ _ _ _ _ _, FMA _ _ _ _ _ _ _ _,
d	1	_ _ _ _ _ _ 0 _ _ _ _, _ _ _ _ _ _ 1 _ _ _ _
e	1	_ _ _ _ _ _ _ _ A _ _

Honeywell

SCM 3000 PLUS M Series

Model Selection Guide

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers I

[_ _ _ _ _ _] - [_ _ _ _ _ _ _ _ _ _ _]

KEY NUMBER **Selection** **Availability** *** = Stocked**

Sizes, Tube Material and Approximate Flowrates							
DN 8mm (3/8") Titanium Measurement Tube Flowrate:: 0-0.1 t/h up to 0-2.0 t/h Flowrate: 0-220 lbs/h up to 4400 lbs/h	CMMT08	↓					
DN 15mm (1/2") Titanium Measurement Tube Flowrate: 0-0.3 t/h up to 0-6.5 t/h Flowrate: 0-660 lbs/h up to 14,300 lbs/h	CMMT15		↓				
DN 25mm (1") Titanium Measurement Tube Flowrate: 0-0.9 t/h up to 0-18.0 t/h Flowrate: 0-1980 lbs/h up to 0-39,600 lbs/h	CMMT25			↓			
DN 40mm (1 1/2") Titanium Measurement Tube Flowrate: 0-2.25 t/h upto 0-45 t/h Flowrate: 0-4950 lbs/h up to 0-99,000 lbs/h	CMMT40				↓		
DN 50mm (2") Titanium Measurement Tube Flowrate: 0-3.5 t/h up to 0-70.0 t/h Flowrate: 0-7700 lbs/h up to 0-154,000 lbs/h	CMMT50					↓	
DN 80mm (3") Titanium Measurement Tube Flowrate: 0-9.0 t/h up to 0-180 t/h Flowrate: 0-19,800 lbs/h up to 0-396,000 lbs/h	CMMT80						↓ *

TABLE I

A - Process Connections and Materials							
Without Process Connections	W0 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN16 DIN2501 PVDF Flanges (only for DN 8-50)	Q1 _ _ _ _ _ _ _ _ _	•	•	•	•	•	
PN40 DIN2501 1.4404 Flanges	S2 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN40 DIN2501 Titanium Flanges	T2 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN64 DIN2501 1.4404 Flanges (only for DN50-80)	S3 _ _ _ _ _ _ _ _ _					•	•
PN64 DIN2501 Titanium Flanges (only for DN50-80)	T3 _ _ _ _ _ _ _ _ _					•	•
PN100 DIN2501 1.4404 Flanges	S4 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN100 DIN2501 Titanium Flanges	T4 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN40 DIN2512N 1.4404 Flanges	S6 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•
PN40 DIN2512N Titanium Flanges	T6 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•

TABLE I, continued

Process Connections and Materials, continued	CMMT _ _	Availability 08	15	25	40	50	80	
PN64 DIN2512N 1.4404 Flanges (only for DN50-80)	S7 _ _ _ _ _ _ _ _ _					•	•	
PN64 DIN2512N Titanium Flanges (only for DN50-80)	T7 _ _ _ _ _ _ _ _ _					•	•	
PN100 DIN2512N 1.4404 Flanges	S8 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
PN100 DIN2512N Titanium Flanges	T8 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
Cl 150 ANSI B16.5 316L Flanges	SA _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	*
Cl 150 ANSI B16.5 Titanium Flanges	TA _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
Cl 150 ANSI B16.5 PVDF Flanges (only for DN8-50)	QA _ _ _ _ _ _ _ _ _	•	•	•	•	•		
Cl 300 ANSI B16.5 316L Flanges	SB _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
Cl 300 ANSI B16.5 Titanium Flanges	TB _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
Cl 600 ANSI B16.5 316L Flanges	SC _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
CL 600 ANSI B16.5 Titanium Flanges	TC _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
10K JIS B2210 1.4404 Flanges (only for DN50-80)	SD _ _ _ _ _ _ _ _ _					•	•	
10K JIS B2210 Titanium Flanges (only for DN50-80)	TD _ _ _ _ _ _ _ _ _					•	•	
10K JIS B2210 PVDF Flanges (only for DN8-50)	QD _ _ _ _ _ _ _ _ _	•	•	•	•	•		
20K JIS B2210 1.4404 Flanges	SE _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
20K JIS B2210 Titanium Flanges	TE _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
30K JIS B 2210 1.4404 Flanges	SF _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
30K JIS B2210 Titanium Flanges	TF _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
40K JIS B2210 1.4404 Flanges	SG _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
40K JIS B2210 Titanium Flanges	TG _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
63K JIS B2210 1.4404 Flanges	SH _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
63K JIS B2210 Titanium Flanges	TH _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
PN16/DN100 DIN2501 1.4404 Flanges (not for DN8-50)	P1 _ _ _ _ _ _ _ _ _						•	
PN40 DN100 DIN2501 1.4404 Flanges (not for DN8-50)	P2 _ _ _ _ _ _ _ _ _						•	
Cl 150/4" ANSI B16.5 1.4404 Flanges (not for DN8-50)	PA _ _ _ _ _ _ _ _ _						•	
Cl 300/4" ANSI B16.5 1.4404 Flanges (not for DN8-50)	PB _ _ _ _ _ _ _ _ _						•	
10K/DN100 JIS B2210 1.4404 Flanges (not for DN8-50)	PD _ _ _ _ _ _ _ _ _						•	
8-VCO-4 (1/2") 316L Couplings (only for DN8)	SV _ _ _ _ _ _ _ _ _	•						
12-VCO-4 (3/4") 316L Couplings (only for DN15)	SW _ _ _ _ _ _ _ _ _		•					
TriClamp 316L Couplings	ST _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
1/2" TriClamp 316L Couplings (only for DN8-15)	SU _ _ _ _ _ _ _ _ _	•	•					
PN16 DIN11851 1.4404 Couplings	SM _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
PN16 SMS1145 1.4404 Couplings	SS _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
TriClamp 316L Couplings 3-A	AT _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
1/2" TriClamp 316L Couplings 3-A (only for DN8-15)	AU _ _ _ _ _ _ _ _ _	•	•					
PN16 DIN11851 1.4404 Couplings 3-A	AM _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
PN16 SMS1145 1.4404 Couplings 3-A	AS _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	
Other	99 _ _ _ _ _ _ _ _ _	•	•	•	•	•	•	

TABLE I, continued

	CMMT _ _	Availability 08	15	25	40	50	80	
B - Flange Seals and Materials								
Viton O-rings (not for sanitary couplings)	_ _ A _ _ _ _ _ _ _	c	c	c	c	c	c	*
EPDM O-rings (not for sanitary couplings	_ _ B _ _ _ _ _ _ _	c	c	c	c	c	c	
Silicone O-rings (not for sanitary couplings)	_ _ C _ _ _ _ _ _ _	c	c	c	c	c	c	
FEP Encapsulated O-rings (not for sanitary couplings/PVDF flanges)	_ _ D _ _ _ _ _ _ _	d	d	d	d	d	d	
Kalrez O-rings (not for sanitary couplings)	_ _ E _ _ _ _ _ _ _	c	c	c	c	c	c	
Silicone Flat Gaskets FDA Approved	_ _ F _ _ _ _ _ _ _	h	h	h	h	h	h	
EPDM Flat Gaskets FDA Approved (only for sanitary couplings)	_ _ G _ _ _ _ _ _ _	h	h	h	h	h	h	
Without Seals (only versions without connections)	_ _ W _ _ _ _ _ _ _	e	e	e	e	e	e	
Other	_ _ 9 _ _ _ _ _ _ _	•	•	•	•	•	•	
C-Construction Certificates/Secondary Containment								
40bar (584 psi) Secondary Containment	_ _ _ 0 _ _ _ _ _ _	•	•	•	•	•	•	*
100bar (1450 psi)ry Containment with Pressure Test Certificate (pressure test certificate includes individual pressure tests of measuring system and containment)	_ _ _ 2 _ _ _ _ _ _	•	•	•	•	•	•	
100bar (1450 psi) Containment with Purge Connections with Pressure Test Certificate (pressure test certificate includes individual pressure tests of measuring system and containment)	_ _ _ 4 _ _ _ _ _ _	•	•	•	•	•	•	
3.1B Version, 100bar (1450 psi) Containment with Pressure Test Certificate (material certificate includes measuring system and containment; pressure test certificate includes individual pressure tests of measuring system and containment)(not for food couplings/PVDF flanges)	_ _ _ 6 _ _ _ _ _ _	d	d	d	d	d	d	
Containment with Purge Connections 3.1B Version, 100bar (1450 psi) Containment with Pressure Test Certificate (material certificate includes measuring system and containment; pressure test certificate includes individual pressure tests of measuring system and containment)(not for food couplings/PVDF flanges)	_ _ _ 8 _ _ _ _ _ _	d	d	d	d	d	d	
Other	_ _ _ 9 _ _ _ _ _ _	•	•	•	•	•	•	

TABLE I, continued

	CMMT _ _	Availability 08	15	25	40	50	80	
D - Calibration								
0.1% Flow Calibration; 2% Density Calibration	_ _ _ _ 0 _ _ _ _ _	•	•	•	•	•	•	*
0.1% Flow Calibration, 0.2% Density Calibration (specify density/temperature range)	_ _ _ _ 1 _ _ _ _ _	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration; 2% Density Calibration (specify calibration range)	_ _ _ _ 2 _ _ _ _ _	•	•	•	•	•	•	
5 Point 0.1% Flow Calibration, 0.2% Density Calibration (specify calibration and density/ temperature range)	_ _ _ _ 3 _ _ _ _ _	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 2% Density (EAL,EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify ccustomers flow range)	_ _ _ _ A _ _ _ _ _	•	•	•	•	•	•	
SCS 3pt 0.1% Flow Calibration; 0.2% Density (EAL, EN45001-3) with Flow Certificate traceable according to ISO 9000 (specify ranges for massflow, density and temperature)	_ _ _ _ B _ _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ 9 _ _ _ _ _	•	•	•	•	•	•	
E - Enclosure Protection Rating and Cable								
IP67/NEMA 4X Compact Version	_ _ _ _ _ A _ _ _ _	•	•	•	•	•	•	*
IP67/NEMA 4X Remote Version, 10m of cable included	_ _ _ _ _ B _ _ _ _	•	•	•	•	•	•	*
IP67/NEMA 4X Remote Version, 20m of cable included	_ _ _ _ _ C _ _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ _ 9 _ _ _ _	•	•	•	•	•	•	
F - Cable Glands								
PG 13.5 Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 0 _ _ _	•	•	•	•	•	•	
M20 X 1.5 Threads for Cable Glands (not for FM and CSA)	_ _ _ _ _ _ 1 _ _ _	•	•	•	•	•	•	
NPT 1/2" Threads for Cable Glands	_ _ _ _ _ _ 2 _ _ _	•	•	•	•	•	•	*
G 1/2" Threads for Cable Glands	_ _ _ _ _ _ 3 _ _ _	•	•	•	•	•	•	
Other	_ _ _ _ _ _ 9 _ _ _	•	•	•	•	•	•	
G - Safety Approvals								
VDE 0165 Certificate of Conformity Zone 2	_ _ _ _ _ _ _ 1 _ _							
CELENEC: EEx de/EEx d ib II C T2-T6 (not for DN8-50)	_ _ _ _ _ _ _ 2 _ _							
CELENEC: EEx de/EEx d ib II C T2-T6	_ _ _ _ _ _ _ 3 _ _	•	•	•	•	•		
FM: XP/I/1/CD/DIP/II,III/1/EFG (not for DN 8-50)	_ _ _ _ _ _ _ 4 _ _						f	
FM: NI/I/2/ABCD/DIP/II,III/1/EFG	_ _ _ _ _ _ _ 5 _ _	f	f	f	f	f	f	*
FM: XP/I/1/ABCD/DIP/II,III/1/EFG (not for DN 80)	_ _ _ _ _ _ _ 6 _ _	f	f	f	f	f		
CSA: Class I, DIv 2, ABCD	_ _ _ _ _ _ _ A _ _	f	f	f	f	f	f	
CSA: Class I, Div 1, ABCD (not for DN 80)	_ _ _ _ _ _ _ B _ _	f	f	f	f	f		
CSA: Class I, Div 1, CD (not for DN 8-50)	_ _ _ _ _ _ _ E _ _						f	
Other	_ _ _ _ _ _ _ 9 _ _	•	•	•	•	•	•	

TABLE I, continued

	CMMT_ _	Availability 08	15	25	40	50	80	
H - Display/Programming								
Blind Unit/HART	_ _ _ _ _ _ _ _ A _ _	•	•	•	•	•	•	
Display with Touch Control	_ _ _ _ _ _ _ _ B _ _	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ 9 _ _	•	•	•	•	•	•	
I - Power Supply								
85-260 VAC, 50/60 Hz Power Supply	_ _ _ _ _ _ _ _ _ 1 _	•	•	•	•	•	•	
20-55 VAC, 16-62 VDC Power Supply	_ _ _ _ _ _ _ _ _ 2 _	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ _ 9 _	•	•	•	•	•	•	
J - SIgnal Outputs								
HART Current and Frequency Output	_ _ _ _ _ _ _ _ _ _ A	•	•	•	•	•	•	
RS485 and Current Output	_ _ _ _ _ _ _ _ _ _ B	•	•	•	•	•	•	
RS485 and Frequency Output	_ _ _ _ _ _ _ _ _ _ C	•	•	•	•	•	•	
Auxiliary Input and Current Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ D	g	g	g	g	g	g	
Auxiliary Input and Frequency Output (not for blind version)	_ _ _ _ _ _ _ _ _ _ E	g	g	g	g	g	g	
HART Current and 2nd Current Output	_ _ _ _ _ _ _ _ _ _ F	•	•	•	•	•	•	*
Other	_ _ _ _ _ _ _ _ _ _ 9	•	•	•	•	•	•	

RESTRICTIONS

Restriction Letter	Table	Available With Selection	Table	Not Available With Selection
c			**IA**	**SV** _ _ _ _ _ _ _ _ _, **SW** _ _ _ _ _ _ _ _ _, **ST** _ _ _ _ _ _ _ _ _, **SM** _ _ _ _ _ _ _ _ _, **SU** _ _ _ _ _ _ _ _ _, **SS** _ _ _ _ _ _ _ _ _, **AT** _ _ _ _ _ _ _ _ _, **AU** _ _ _ _ _ _ _ _ _, **AM** _ _ _ _ _ _ _ _ _, **AS** _ _ _ _ _ _ _ _ _
d			**IA**	**SV** _ _ _ _ _ _ _ _ _, **SW** _ _ _ _ _ _ _ _ _, **ST** _ _ _ _ _ _ _ _ _, **SM** _ _ _ _ _ _ _ _ _, **SU** _ _ _ _ _ _ _ _ _, **SS** _ _ _ _ _ _ _ _ _, **AT** _ _ _ _ _ _ _ _ _, **AU** _ _ _ _ _ _ _ _ _, **AM** _ _ _ _ _ _ _ _ _, **AS** _ _ _ _ _ _ _ _ _, **Q1** _ _ _ _ _ _ _ _ _, **QA** _ _ _ _ _ _ _ _ _, **QD** _ _ _ _ _ _ _ _
e	**IA**	**W0** _ _ _ _ _ _ _ _ _		
f			**IF**	_ _ _ _ _ **0** _ _ _ _, _ _ _ _ _ **1** _ _ _ _
g			**IH**	_ _ _ _ _ _ _ **A** _ _
h			**IA**	**SV** _ _ _ _ _ _ _ _ _, **SW** _ _ _ _ _ _ _ _ _, **ST** _ _ _ _ _ _ _ _ _, **SM** _ _ _ _ _ _ _ _ _, **SU** _ _ _ _ _ _ _ _ _, **SS** _ _ _ _ _ _ _ _ _, **AT** _ _ _ _ _ _ _ _ _, **AU** _ _ _ _ _ _ _ _ _, **AM** _ _ _ _ _ _ _ _ _, **AS** _ _ _ _ _ _ _ _ _

SCM 3000 *PLUS*
Smart Coriolis Mass Flowmeter

Application Data Sheet

Date: _____

Customer: _____ Honeywell Sales Contact: _____

1. Detector Requirements (Must specify data in **bold** typeface to place an order)

- **Environment:** ☐ **General Purpose Nonhazardous Area** ☐ **Class I, Div. I, EXP** ☐ **Class I, Div. II, NI** ☐ **Sanitary** → **CIP** ☐ Yes ☐ NO
- **Process Liquid** _____

  If composite, must specify solids and gas data as applicable. (If % solids, is DZA possible?)

  - Composition Materials and %solids _____
- Is Liquid Abrasive: ☐ Yes ☐ NO
- Is Liquid Corrosive to Hastelloy C: ☐ Yes ☐ NO
- Is Liquid Corrosive to SS316: ☐ Yes ☐ NO
- Is Liquid Corrosive to Titanium: ☐ Yes ☐ NO
- **Process Temperature in °C or °F:** **Minimum:**_____ **Normal:**_____ **Maximum:** _____
- **Process Pressure in psi or bar:** **Minimum:**_____ **Normal:**_____ **Maximum:** _____
- Process Static Pressure in psi or bar: _____
- Process Vapor Pressure: at temperature _____ °C or °F rating within operating range is _____ bar or psi
- **Density in g/cm³ or lb/ft³:** _____

  (If specific gravity value is given for density, be sure to give reference temperature as well.)
- **Viscosity in cST, cP, or mPa:** **Minimum:**_____ **Maximum:**_____
- **Flow Range in lb/s, lb/min, lb/h, t/h, kg/s, kg/min, or kg/h:**

  Minimum:_____ **Normal:**_____ **Maximum:**_____
- **Nominal Pipe Diameter in "in" or "mm":** _____ • Process Pipe Material: _____
- Gasket Material: ☐ Viton ☐ Kalrez ☐ Silicone ☐ EPDM ☐ FEP Viton
- Zero Flow with Full Pipe Possible: ☐ Yes ☐ NO • Pulsating Flow: ☐ Yes ☐ NO
- **Maximum Allowable Pressure Drop in psi or bar:** _____
- **Is Special Density Calibration Required:** ☐ **Yes** (0.1 or 0.2%) ☐ **NO** (1 or 2%)

  (Recommended when using the SCM 3000 for density, volumetric or % solids measurements.)

Specify the minimum and maximum density (ρ) values and the corresponding minimum and maximum temperature (T) values if Special Density Calibration is required.

		Minimum*	**Maximum***
Density (ρ)	**sgu, g/cm³, lb/ft³**	_____	_____
Temperature (T)	**°C, °F**	_____	_____

**NOTE: Densities must be in the range of 0.8 to 1.8 g/cm³ (50 to 112 lb/ft³) and temperatures must be in the range of 10 to 120°C (50 to 240°F).*

TYPICAL DENSITY ACCURACIES

If $\Delta\rho \leq 0.1$ g/cm³ and $\Delta T \leq 25$°C, DA ≤ 0.2%
If $\Delta\rho \leq 0.1$ g/cm³ and $\Delta T \leq 50$°C, DA ≤ 0.4%
If $\Delta\rho \leq 0.25$ g/cm³ and $\Delta T \leq 25$°C, DA ≤ 0.3%
If $\Delta\rho \leq 0.25$ g/cm³ and $\Delta T \leq 50$°C, DA ≤ 0.6%
If $\Delta\rho \leq 0.5$ g/cm³ and $\Delta T \leq 25$°C, DA ≤ 0.8%
If $\Delta\rho \leq 0.5$ g/cm³ and $\Delta T \leq 50$°C, DA ≤ 1.2%

Where:
DA = Density Accuracy
$\Delta\rho$ = Change in Density
$\Delta\tau$ = Change in Temperature

2. Transmitter

- **Integral** ☐ **Remote:** ☐ **30 ft.** ☐ **60 ft.** ☐ Display OR ☐ Blind
- **Mode of Operation:** ☐ **Analog 1** ☐ **Analog 2** ☐ **Pulse** ☐ **Digital Communications to TPS**
- **Power Supply Voltage:**_____ **Vac or Vdc**

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