3051SF Series Specifications

3051SF Performance specifications

Performance assumptions include: measured pipe I.D, transmitter is trimmed for optimum flow accuracy, and performance is dependent on application parameters.

Table 4. MultiVariable Flow Performance - Flow Reference Accuracy (Measurement Type 1)(1)(2)

3051SFA Annubar Flowmeter			
		Classic MV (8:1 flow turndown)	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3		±1.15% of Flow Rate	±0.80% of Flow Rate
3051SFC_A Compact Annubar Flowmeter - Annubar Option A			
		Classic MV (8:1 flow turndown)	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	Uncalibrated	±1.60% of Flow Rate	±1.55% of Flow Rate
	Calibrated	±1.00% of Flow Rate	±0.80% of Flow Rate
3051SFC Compact Orifice Flowmeter - Conditioning Option C			
		Classic MV (8:1 flow turndown)	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β=0.4	±1.10% of Flow Rate	±0.75% of Flow Rate
	β=0.65	±1.45% of Flow Rate	±1.15% of Flow Rate
3051SFC Compact Orifice Flowmeter - Orifice Option P(3)			
		Classic MV (8:1 flow turndown)	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β=0.4	±1.45% of Flow Rate	±1.30% of Flow Rate
	β=0.65	±1.45% of Flow Rate	±1.30% of Flow Rate
3051SFP Integral Orifice Flowmeter			
		Classic MV (8:1 flow turndown)	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β<0.1	±2.65% of Flow Rate	±2.60% of Flow Rate
	0.1<β<0.2	±1.60% of Flow Rate	±1.40% of Flow Rate
	0.2<β<0.6	±1.25% of Flow Rate	±0.95% of Flow Rate
	0.6<β<0.8	±1.80% of Flow Rate	±1.60% of Flow Rate

(1) Measurement Types 2 - 4 assume that the unmeasured variables are constant. Additional uncertainty will depend on the variation in the unmeasured variables.

(2) Range 1 flowmeters experience an additional uncertainty up to 0.9%. Consult your Emerson Process Management Representative for exact specifications.

(3) For line size less than 2 in. (50 mm) or greater than 8 in. (200 mm), add an additional 0.5% uncertainty.

Table 5. Flow Performance - Flow Reference Accuracy (Measurement Type D)(1)(2)(3)

3051SFA Annubar Flowmeter				
		Classic (8:1 flow turndown)	**Ultra (8:1 flow turndown)**	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3		±1.25% of Flow Rate	±0.95% of Flow Rate	±0.80% of Flow Rate
3051SFC_A Compact Annubar Flowmeter - Annubar Option A				
		Classic (8:1 flow turndown)	**Ultra (8:1 flow turndown)**	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	Uncalibrated	±1.70% of Flow Rate	±1.65% of Flow Rate	±1.55% of Flow Rate
	Calibrated	±1.25% of Flow Rate	±0.95% of Flow Rate	±0.80% of Flow Rate
3051SFC Compact Orifice Flowmeter – Conditioning Option C				
		Classic (8:1 flow turndown)	**Ultra (8:1 flow turndown)**	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β=0.4	±1.10% of Flow Rate	±0.9% of Flow Rate	±0.75% of Flow Rate
	β=0.65	±1.40% of Flow Rate	±1.25% of Flow Rate	±1.15% of Flow Rate
3051SFC Compact Orifice Flowmeter – Orifice Option P(4)				
		Classic (8:1 flow turndown)	**Ultra (8:1 flow turndown)**	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β=0.4	±1.80% of Flow Rate	±1.35% of Flow Rate	±1.30% of Flow Rate
	β=0.65	±1.80% of Flow Rate	±1.35% of Flow Rate	±1.30% of Flow Rate
3051SFP Integral Orifice Flowmeter				
		Classic (8:1 flow turndown)	**Ultra (8:1 flow turndown)**	**Ultra for Flow (14:1 flow turndown)**
Ranges 2-3	β<0.1	±2.70% of Flow Rate	±2.65% of Flow Rate	±2.60% of Flow Rate
	0.1<β<0.2	±1.80% of Flow Rate	±1.45% of Flow Rate	±1.40% of Flow Rate
	0.2<β<0.6	±1.50% of Flow Rate	±1.05% of Flow Rate	±0.95% of Flow Rate
	0.6<β<0.8	±2.00% of Flow Rate	±1.70% of Flow Rate	±1.60% of Flow Rate

(1) For Measurement Types 5 - 7, refer to the Reference Accuracy specification for the 3051SMV with Measurement Type P.

(2) These flow measurement accuracies assume a constant density, viscosity, and expansibility factor.

(3) Range 1 flowmeters experience an additional uncertainty up to 0.9%. Consult your Emerson Process Management Representative for exact specifications.

(4) For line size less than 2 in. (50 mm) or greater than 8 in. (200 mm), add an additional 0.5% uncertainty.

3051SF Dynamic performance

Total Time Response at 75 °F (24 °C), includes dead time(1)

3051SF_D	3051SF_1, 2, 5, or 6	3051SF_3, 4, or 7
DP Ranges 2-5: 100 ms	DP Range 1: 310 ms	DP Ranges 2-5: 145 ms
Range 1: 255 ms	DP Range 2: 170 ms	DP Range 1: 300 ms
Range 0: 700 ms	DP Range 3: 155 ms	DP Range 0: 745 ms
	AP & GP: 240 ms	

(1) For FOUNDATION fieldbus (output code F), add 52 ms to stated values (not including segment macro-cycle).
For option code DA2, add 45 ms (nominal) to stated values.

Dead Time(1)

3051SF_D	3051SF_1-7
45 ms (nominal)	DP: 100 ms AP & GP: 140 ms RTD Interface: 1 s

(1) For option code DA2, dead time is 90 milliseconds (nominal).

Update Rate(1)

3051SF_D	3051SF_1-7	
22 updates per sec.	DP: 22 updates per sec. AP & GP: 11 updates per sec. RTD Interface: 1 update per sec.	Calculated Variables: Mass / Volumetric Flow Rate: 22 updates per sec. Energy Flow Rate: 22 updates per sec. Totalized Flow: 1 update per sec.

(1) Does not apply to Wireless (output code X). See "Wireless Self-Organizing Networks" on page 36 for wireless update rate.

Mounting position effects

Models		Ultra, Ultra for Flow, Classic and Classic MV
3051SF_3, 4, 7, or D		Zero shifts up to ±1.25 inH_2O (3,11 mbar), which can be zeroed Span: no effect
3051SF_1, 2, 5, or 6	DP Sensor:	Zero shifts up to ±1.25 inH_2O (3,11 mbar), which can be zeroed Span: no effect
	GP/AP Sensor:	Zero shifts to ±2.5 inH_2O (6,22 mbar), which can be zeroed Span: no effect

Vibration Effect for 3051SFA, 3051SFC, and 3051SFP

Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-1000 Hz test frequency range, 0.15mm displacement peak amplitude, 20m/s2 acceleration amplitude).(1)

Power supply effect

Less than ±0.005% of calibrated span per volt change in voltage at the transmitter terminals

(1) Stainless steel temperature housing is not recommended with primary element technology A in application with mechanical vibration.

Electromagnetic Compatibility (EMC)

Meets all relevant requirements of EN 61326 and NAMUR NE-21.[1] [2]

Transient Protection (Option T1)

Meets IEEE C62.41.2-2002, Location Category B

6 kV crest (0.5 - 100 kHz)

3 kA crest (8 × 20 microseconds)

6 kV crest (1.2 × 50 microseconds)

Meets IEEE C37.90.1-2002 Surge Withstand Capability

SWC 2.5 kV crest, 1.0 MHz wave form

(1) NAMUR NE-21 does not apply to wireless output code X.

(2) 3051SMV and 3051SF_1, 2, 3, 4, 5, 6, 7 requires shielded cable for both temperature and loop wiring.

3051SF Functional specifications

Range and Sensor limits

Flowmeter with Coplanar Sensor Module

Range	DP Sensor (3051SF_3, 4, or 7)	
	Lower (LRL)	Upper (URL)
1	0 inH_2O (0 mbar)	25 inH_2O (62,3 mbar)
2	0 inH_2O (0 bar)	250 inH_2O (0,62 bar)
3	0 inH_2O (0 bar)	1000 inH_2O (2,49 bar)

Flowmeter with MultiVariable Sensor Module

Range	DP Sensor (3051SF1, 2, 5, or 6)	
	Lower (LRL)	Upper (URL)
1	0 inH_2O (0 mbar)	25.0 inH_2O (62,3 mbar)
2	0 inH_2O (0 bar)	250.0 inH_2O (0,62 bar)
3	0 inH_2O (0 bar)	1000.0 inH_2O (2,49 bar)
Range	**Static Pressure Sensor (GP/AP)**	
	Lower (LRL)	**Upper (URL)[1]**
3	GP[2]: -14.2 psig (0,98 bar) AP: 0.5 psia (34,5 mbar)	GP: 800 psig (55,16 bar) AP: 800 psia (55,16 bar)
4	GP[2]: -14.2 psig (0,98 bar) AP: 0.5 psia (34,5 mbar)	GP: 3626 psig (250 bar) AP: 3626 psia (250 bar)

(1) For SP Range 4 with DP Range 1, the URL is 2000 psi (137,9 bar).

(2) Inert Fill: Minimum pressure = 1.5 psia (0,10 bar) or -13.2 psig (-0,91 bar).

Process Temperature RTD Interface (3051SF_1, 3, 5 or 7)[1]

Lower (LRL)	Upper (URL)
-328 °F (-200 °C)	1562 °F (850 °C)

(1) Transmitter is compatible with any Pt 100 RTD sensor. Examples of compatible RTDs include Rosemount Series 68 and 78 RTD Temperature Sensors.

Minimum Span limits

Transmitter with Coplanar Sensor Module (Single variable)

Range	DP Sensor (3051SF_D, 3, 4 or 7)	
	Ultra & Ultra for Flow	Classic
1	0.5 inH_2O (1,24 mbar)	0.5 inH_2O (1,24 mbar)
2	1.3 inH_2O (3,11 mbar)	2.5 inH_2O (6,23 mbar)
3	5.0 inH_2O (12,4 mbar)	10.0 inH_2O (24,9 mbar)

Transmitter with MultiVariable Sensor Module

Range	DP Sensor (3051SF_1, 2, 5, or 6)	
	Ultra for Flow	Classic MV
1	0.5 inH_2O (1,24 mbar)	0.5 inH_2O (1,24 mbar)
2	1.3 inH_2O (3,11 mbar)	2.5 inH_2O (6,23 mbar)
3	5.0 inH_2O (12,4 mbar)	10.0 inH_2O (24,9 mbar)
Range	**Static Pressure Sensor (GP/AP)**	
	Ultra for Flow	**Classic MV**
3	4.0 psi (276 mbar)	8.0 psi (522 mbar)
4	18.13 psi (1,25 bar)	36.26 psi (2,50 bar)

Process Temperature RTD interface (3051SF_1, 3, 5 or 7)

Minimum Span = 50 °F (28 °C)

Service

3051SF_5, 6, 7, or D (Direct Process Variable Output):
Liquid, gas, and steam applications

3051SF_1, 2, 3, or 4 (Mass and Energy Flow Output):
Some fluid types are only supported by certain measurement types

Fluid Compatibility with Pressure and Temperature Compensation • Available — Not available

Ordering Code	Measurement Type	Fluid Types			
		Liquids	Saturated Steam	Superheated Steam	Gas and Natural Gas
1	DP / P/ T (Full Compensation)	•	•	•	•
2	DP / P	•	•	•	•
3	DP / T	•	•	—	—
4	DP only	•	•	—	—

4–20 mA/HART

Zero and Span Adjustment
Zero and span values can be set anywhere within the range.
Span must be greater than or equal to the minimum span.

Output
Two-wire 4–20 mA is user-selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol.

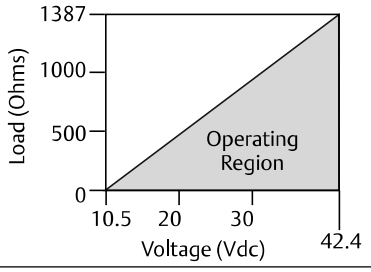
Power Supply
External power supply required.

- 3051SF_D: 10.5 to 42.4 Vdc with no load
- 3051SF_D with Advanced HART Diagnostics Suite: 12 to 42.4 Vdc with no load
- 3051SF_1-7: 12 to 42.4 Vdc with no load

Load Limitations
Maximum loop resistance is determined by the voltage level of the external power supply, as described by:

3051SF_D

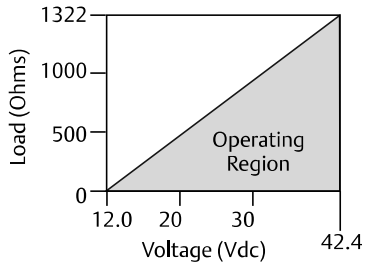
Maximum Loop Resistance = 43.5 * (Power Supply Voltage – 10.5)



The Field Communicator requires a minimum loop resistance of 250Ω for communication.

3051SF_1-7 and 3051SF_D with HART Diagnostics (option code DA2)

Maximum Loop Resistance = 43.5 * (Power Supply Voltage – 12.0)



The Field Communicator requires a minimum loop resistance of 250Ω for communication.

Advanced HART Diagnostics Suite (Option Code DA2)
The 3051SF provides Abnormal Situation Prevention indication for a breakthrough in diagnostic capability. The 3051SF ASP Diagnostics Suite for HART includes Statistical Process Monitoring (SPM), variable logging with time stamp and advanced process alerts. The enhanced EDDL graphic display provides an intuitive and user-friendly interface to better visualize these diagnostics.
The integral SPM technology calculates the mean and standard deviation of the process variable 22 times per second and makes them available to the user. The 3051SF uses these values and highly flexible configuration options for customization to detect many user-defined or application specific abnormal situations (e.g. detecting plugged impulse lines and fluid composition change). Variable logging with time stamp and advanced process alerts capture valuable process and sensor data to enable quick troubleshooting of application and installation issues.

FOUNDATION fieldbus

Power Supply

External power supply required; transmitters operate on 9.0 to 32.0 Vdc transmitter terminal voltage.

Current Draw

17.5 mA for all configurations (including LCD display option)

FOUNDATION fieldbus Parameters

Schedule Entries	14 (max.)
Links	30 (max.)
Virtual Communications Relationships (VCR)	20 (max.)

Standard Function Blocks

Resource Block

- Contains hardware, electronics, and diagnostic information.

Transducer Block

- Contains actual sensor measurement data including the sensor diagnostics and the ability to trim the pressure sensor or recall factory defaults.

LCD Block

- Configures the local display.

2 Analog Input Blocks

- Processes the measurements for input into other function blocks. The output value is in engineering or custom units and contains a status indicating measurement quality.

PID Block with Auto-tune

- Contains all logic to perform PID control in the field including cascade and feedforward. Auto-tune capability allows for superior tuning for optimized control performance.

Backup Link Active Scheduler (LAS)

The transmitter can function as a Link Active Scheduler if the current link master device fails or is removed from the segment.

Software Upgrade in the Field

Software for the 3051SF with FOUNDATION fieldbus is easy to upgrade in the field using the FOUNDATION fieldbus Common Device Software Download procedure.

PlantWeb Alerts

Enable the full power of the PlantWeb digital architecture by diagnosing instrumentation issues, communicating advisory, maintenance, and failure details, and recommending a solution.

Advanced Control Function Block Suite (Option Code A01)

Input Selector Block

- Selects between inputs and generates an output using specific selection strategies such as minimum, maximum, midpoint, average, or first "good."

Arithmetic Block

- Provides pre-defined application-based equations including flow with partial density compensation, electronic remote seals, hydrostatic tank gauging, ratio control and others.

Signal Characterizer Block

- Characterizes or approximates any function that defines an input/output relationship by configuring up to twenty X, Y coordinates. The block interpolates an output value for a given input value using the curve defined by the configured coordinates.

Integrator Block

- Compares the integrated or accumulated value from one or two variables to pre-trip and trip limits and generates discrete output signals when the limits are reached. This block is useful for calculating total flow, total mass, or volume over time.

Output Splitter Block

- Splits the output of one PID or other control block so that the PID will control two valves or other actuators.

Control Selector Block

- Selects one of up to three inputs (highest, middle, or lowest) that are normally connected to the outputs of PID or other control function blocks.

Block	Execution Time
Resource	-
Transducer	-
LCD Block	-
Analog Input 1, 2	20 milliseconds
PID with Auto-tune	35 milliseconds
Input Selector	20 milliseconds
Arithmetic	20 milliseconds
Signal Characterizer	20 milliseconds
Integrator	20 milliseconds
Output Splitter	20 milliseconds
Control Selector	20 milliseconds

Fully Compensated Mass Flow Block (Option Code H01)

Calculates fully compensated mass flow based on differential pressure with external process pressure and temperature measurements over the fieldbus segment. Configuration for the mass flow calculation is easily accomplished using the Rosemount Engineering Assistant.

ASP Diagnostics Suite for FOUNDATION fieldbus (Option Code D01)

The 3051SF ASP Diagnostics Suite for FOUNDATION fieldbus provides Abnormal Situation Prevention indication and enhanced EDDL graphic displays for easy visual analysis. The integral Statistical Process Monitoring (SPM) technology calculates the mean and standard deviation of the process variable 22 times per second and makes them available to the user. The 3051SF uses these values and highly flexible configuration options for customization to detect many user-defined or application specific abnormal situations (e.g. detecting plugged impulse lines and fluid composition change).

Wireless Self-Organizing Networks

Output

WirelessHART, 2.4 GHz DSSS.

Local Display

The optional five-digit LCD can display user-selectable information such as primary variable in engineering units, percent of range, sensor module temperature, and electronics temperature. Display updates at up to once per minute.

Update Rate

WirelessHART, user selectable 8 sec. to 60 min.

Power Module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with polybutadine terephthalate (PBT) enclosure. Ten-year life at one minute update rate.(1)

(1) Reference conditions are 70 °F (21 °C), and routing data for three additional network devices.
Note: Continuous exposure to ambient temperature limits of -40 °F or 185 °F (-40 °C or 85 °C) may reduce specified life by less than 20 percent.

Overpressure Limits

Transmitters withstand the following limits without damage:

Coplanar Sensor Module (Single Variable)

Range	DP(1)
	3051SF_3, 4, 7, or D
1	2000 psi (137,9 bar)
2	3626 psi (250,0 bar)
3	3626 psi (250,0 bar)

(1) The overpressure limit of a DP Sensor with the P9 option is 4500 psig (310,3 bar). The overpressure limit of a DP Sensor with the P0 option is 6092 psig (420 bar).

Coplanar MultiVariable Sensor Module (3051SF_1, 2, 5, or 6)

Static Pressure	Differential Pressure		
	Range 1	Range 2	Range 3
Range 3 GP/AP	1600 psi (110,3 bar)	1600 psi (110,3 bar)	1600 psi (110,3 bar)
Range 4 GP/AP	2000 psi (137,9 bar)	3626 psi (250 bar)	3626 psi (250 bar)

Static Pressure Limits

Coplanar Sensor Module

Operates within specifications between static line pressures of:

Range	DP Sensor(1)
	3051SF_3, 4, 7, or D
1	0.5 psia to 2000 psig (0,03 to 137,9 bar)
2	0.5 psia to 3626 psig (0,03 to 150 bar)
3	0.5 psia to 3626 psig (0,03 to 150 bar)

(1) The static pressure limit of a DP Sensor with the P9 option is 4500 psig (310,3 bar). The static pressure limit of a DP Sensor with the P0 option is 6092 psig (420 bar).

Coplanar MultiVariable Sensor Module (3051SF_1, 2, 5, or 6)

Operates within specifications between static line pressures of 0.5 psia (0,03 bar) and the values in the table below:

Static Pressure	Differential Pressure		
	Range 1	Range 2	Range 3
Range 3 GP/AP	800 psi (57,91 bar)	800 psi (57,91 bar)	800 psi (57,91 bar)
Range 4 GP/AP	2000 psi (137,9 bar)	3626 psi (250 bar)	3626 psi (250 bar)

Burst Pressure Limits

Coplanar Sensor Module

10000 psig (689,5 bar)

Temperature Limits

Ambient

-40 to 185 °F (-40 to 85 °C)
With LCD display(1): -40 to 175 °F (-40 to 80 °C)
With option code P0: -20 to 185 °F (-29 to 85 °C)

(1) LCD display may not be readable and LCD updates will be slower at temperatures below -4 °F (-20 °C).

Storage

-50 to 185 °F (-46 to 85 °C)
With LCD display: -40 to 185 °F (-40 to 85 °C)
With Wireless Output: -40 to 185 °F (-40 to 85 °C)

Process Temperature Limits

3051SFA Process Temperature Limits

Direct Mount Transmitter

- 500 °F (260 °C)
- 750 °F (398 °C) when used with a direct mount, high temperature 5-valve manifold (Transmitter Connection Platform code 6). Maximum temperature limit for steam processes is 650 °F (343 °C).
- 400 °F (204 °C) when top mounted in steam service

3051SFC Process Temperature Limits

Direct Mount Transmitter

- -40 to 450 °F (-40 to 232 °C)
- Up to 400 °F (204 °C) when top mounted in steam service

Remote Mount Transmitter

- -148 to 850 °F (-100 to 454 °C) – Stainless Steel

3051SFP Process Temperature Limits

Standard (direct/remote mount):

- –40 to 450 °F (–40 to 232 °C)

Extended (remote mount only with option code G):

- –148 to 850 °F (–100 to 454 °C)

Humidity Limits

0–100% relative humidity

Turn-On Time(1)

When power is applied to the transmitter during startup, performance will be within specifications per the time period described below:

Transmitter	Turn-On Time (Typical)
3051S, 3051SF_D	2 seconds
Diagnostics	5 seconds
3051SMV, 3051SF_1-7	5 seconds

(1) Does not apply to wireless option code X.

Volumetric Displacement

Less than 0.005 in^3 (0,08 cm^3)

Damping(1)

Analog output response time to a step change is user-selectable from 0 to 60 seconds for one time constant. For 3051SF_1-7, each variable can be individually adjusted. Software damping is in addition to sensor module response time.

(1) Does not apply to wireless option code X.

Failure Mode Alarm

HART 4-20 mA (output option code A)

If self-diagnostics detect a gross transmitter failure, the analog signal will be driven offscale to alert the user. Rosemount standard (default), NAMUR, and custom alarm levels are available (see Alarm Configuration below).

High or low alarm signal is software-selectable or hardware-selectable via the optional switch (option D1).

Alarm Configuration

	High Alarm	Low Alarm
Default	21.75 mA	3.75 mA
NAMUR compliant(1)	22.5 mA	3.6 mA
Custom levels(2)	20.2 - 23.0 mA	3.4 - 3.8 mA

(1) Analog output levels are compliant with NAMUR recommendation NE 43, see option codes C4 or C5.

(2) Low alarm must be 0.1 mA less than low saturation and high alarm must be 0.1 mA greater than high saturation.

Physical Specifications

Safety-Certified Transmitter Failure Values(1)

Safety accuracy: 2.0%(2)
Safety response time: 1.5 seconds

(1) Does not apply to wireless option code X.

(2) A 2% variation of the transmitter mA output is allowed before a safety trip. Trip values in the DCS or safety logic solver should be derated by 2%.

Electrical Connections

1/2–14 NPT, G1/2, and M20 × 1.5 conduit. HART interface connections fixed to terminal block for Output code A and X.

Process Connections

Coplanar Sensor Module	
Standard	1/4-18 NPT on 2 1/8-in. centers

Process-Wetted Parts

3051SFA Wetted Parts - Annubar Sensor Material

- 316 Stainless Steel
- Alloy C-276

3051SFC Wetted Parts - Material of Construction

Body/Plate
- 316/316L SST
- 50 micro-inch Ra surface finish

Manifold Head/Valves
- 316 SST

Flange Studs and Nuts
- Customer supplied
- Available as a spare part

Transmitter Connection Studs and Nuts
- Studs– A193 Grade B8M.
- Nuts– A194 Grade 8M.

Gasket and O-rings
- Gaskets are customer supplied.
- Durlon 8500 fiber gaskets are recommended. Consult an Emerson Process Management representative for use with other gaskets.
- Available as a spare part

NOTE
Gaskets and O-rings should be replaced when the 405 is disassembled.

3051SFP Wetted Parts - Material of Construction

Orifice Plate
- 316/316L SST
- Alloy C-276
- Alloy 400

Body
- 316 SST (CF8M), material per ASTM A351

Pipe Material (If Applicable)
- A312 Gr 316/316L, B622 UNS N10276, Alloy C-276

Flange
- A182 Gr 316/316L, SB-564 UNS N10276, Alloy C-276
- Flange pressure limits are per ANSI B16.5
- Flange face finish per ANSI B16.5, 125 to 250 RMS

Body Bolts/Studs
- ASTM A193 Gr B8M studs
- ASTM A193 Gr B8M Class 2 body studs provided for high temperature option code G

Transmitter Connection Studs
- ASTM A193 Gr B8M studs

Gaskets/O-rings
- Glass filled PTFE
- Inconel® X-750 provided for high temperature option code G
- Gaskets and O-rings must be replaced each time the 3051SFP is disassembled for installation or maintenance.

Process Isolating Diaphragms

Coplanar Sensor Module
316L SST (UNS S31603), Alloy C-276 (UNS N10276), Alloy 400 (UNS N04400), Tantalum (UNS R05440), Gold-Plated Alloy 400, Gold-plated 316L SST

Drain/Vent Valves

316 SST, Alloy C-276, or Alloy 400/K-500 material
(Drain vent seat: Alloy 400, Drain vent stem: Alloy K-500)

Process Flanges and Adapters

Plated carbon steel
SST: CF-8M (Cast 316 SST) per ASTM A743
Cast C-276: CW-12MW per ASTM A494
Cast Alloy 400: M-30C per ASTM A494

Non-Wetted Parts

Electronics Housing

Low-copper aluminum alloy or CF-8M (Cast 316 SST)
NEMA 4X, IP 66, IP 68 (66 ft (20 m) for 168 hours)
Note: IP 68 not available with Wireless Output.

Paint for Aluminum Housing

Polyurethane

Coplanar Sensor Module Housing

SST: CF-3M (Cast 316L SST)

Bolts

Plated carbon steel per ASTM A449, Type 1
Austenitic 316 SST per ASTM F593
ASTM A453, Class D, Grade 660 SST
ASTM A193, Grade B7M alloy steel
ASTM A193, Class 2, Grade B8M SST
Alloy K-500

Sensor Module Fill Fluid

Silicone or inert halocarbon

Cover O-rings

Nitirile Butadiene (NBR)

Wireless Antenna

PBT/ polycarbonate (PC) integrated omnidirectional antenna

Power Module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with PBT enclosure