Product Data Sheet
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Rosemount 4051S Differential Pressure (DP) Flow Meters



Revolutionize how you measure pressure

With innovative features to make tasks easier, Rosemount 4051S DP Flow Meters give you more flexibility, more performance, more insights, and more peace of mind. Emerson has designed the 4051S DP Flow Meters to simplify your day-to-day operations and help you spend less time configuring your pressure transmitter and more time focusing on the tasks that matter. 4051S DP Flow Meters are engineered to endure the most demanding processes and harshest environments while prioritizing safety.

ROSEMOUNT™

EMERSON™

Overview

Rosemount 4051S DP Flow Meters are built to withstand the toughest processes and the harshest environments. Customers get more peace of mind knowing they will perform day after day with:

- Industry-leading 20-year warranty
- Industry-leading 20-year stability
- 40 ms time response option
- 800:1 rangedown (28:1 flow turn down)

Contents

Overview....2
Rosemount 4051S Differential Pressure (DP) Flow Meter selection guide....4
Rosemount 4051SF Differential Pressure Flow Meters....4
Specifications....34
Relevant documents....48

Designed to simplify your day-to-day operations

Easier to use

Designed to simplify your day-to-day operations, Rosemount 4051S DP Flow Meters can help you spend less time configuring your flow meter and more time focusing on the tasks that matter.

- Graphical, backlit display is larger, easier to read, and available in seven languages.
- Intuitive user interface, so it is easy to find what you are looking for.
- Simplify configuration and maintenance with Bluetooth® connectivity.
- Easily configure for volumetric flow, mass flow rate, or totalized flow using the display.

Advanced safety features

4051S DP Flow Meters have safety built-in at their cores with more ways to help keep your team and facility safe.

- Increase personnel safety and avoid entering hazardous locations with Bluetooth connectivity.
- Built-in proof testing provides reliable verification of instrument functionality to improve operational efficiency and safety.

More insights

With more information at your fingertips, you can make more confident decisions.

- **Loop Integrity** diagnostic continuously monitors the health of the entire electrical loop to detect potential failures before they disrupt your operations.
- Ensure your output responds to process changes with **Plugged Impulse Line** detection.
- Detect abnormal conditions with process intelligence and get early visibility to potential process disruptions.
- Prioritize work and avoid shutdowns with process alerts.
- Built-in calibration and diagnostic logs give you access to information when you need it.

Greater connectivity

Get connected with Bluetooth technology to enable increased productivity, reliability, and safety. Make real-time decisions with:

- Simplified operator rounds through fast and easy device connection.
- Enhanced troubleshooting and configuration by knowing which devices need attention.
- AMS Device Configurator application for a seamless experience across devices.

Reliable relay switches

Pressure switches provide enhanced asset protection and maintain system safety.

- Reduce accuracy and reliability issues that can happen with standalone switches.
- Enable discrete control capabilities for installations without a programmable logic controller (PLC) or distributed control system (DCS).
- Control equipment based on pressure, flow, or level variables and know your switch is correctly configured and functioning correctly.
- Safety Instrumented Systems (SIS) applications provide redundant SIS path to final control element.

Rosemount 4051S Differential Pressure (DP) Flow Meter selection guide

For the latest information on product availability and/or options, use the product configurator at Emerson.com/global or contact your local Emerson representative.

Rosemount 4051SF Differential Pressure Flow Meters



4051S Differential Pressure Flow Meters are built on the reliable 4051S platform, offering a versatile solution for flow measurement.

- Designed for accurate and reliable flow measurement, ensuring optimal performance in various process conditions.
- Arrives fully-configured, leak-tested, and ready-to-install right out of the box for fast installation.
- DP Flow Sizing & Selection Tool streamlines the configuration process, considering factors like accuracy, pressure loss, and installation requirements.
- Use the sizing tool to find the best solution for your application.

Ordering information:

Rosemount 4051SFA Annubar™ Flow Meter

Rosemount 4051SFC Compact Flow Meter

Rosemount 4051SFP Integral Orifice Flow Meter

Related information

Rosemount 4051SFA Annubar Flow Meter

Rosemount 4051SFC Compact Flow Meter

Rosemount 4051SFP Integral Orifice Flow Meter

Rosemount 4051SF Differential Pressure Flow Meters



4051SF Flow Meters integrate the 4051S with industry leading primary elements. Capabilities include:

- Emerson configures flow meters at the factory to meet your application needs (*DP Flow Configuration Data Sheet* required, available at Emerson.com)
- 4–20 mA HART® protocol with two integral relay switches
- Ultra-For-Flow for improved flow performance across wider flow ranges
- Advanced diagnostics
- Direct or remote mount configurations available

Specifications and options

The purchaser of the equipment must specify and select:

- Product materials
- Options
- Components

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

Sizing and selection

Use the Differential Pressure (DP) Level Sizing and Selection Tool to size Rosemount DP Level meters to meet your application-specific requirements.

The Sizing and Selection tool:

1. Verifies if a selected product meets your application requirements
2. Provide a comparison between different system types
3. Generates a detailed accuracy comparison graph

Once a sizing is completed, the configuration tool will help create a complete and valid model code to match your requirements and include any additional options or approvals.

Rosemount 4051SFA Annubar™ Flow Meter



- Rosemount Annubar Flow Meters reduce permanent pressure loss by creating less blockage in the pipe.
- Ideal for large line size installations when cost, size, and weight of the flow meter are concerns.

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.

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Required model components

Model

Code	Description	
4051SFA	Annubar™ Flow Meter	★

Measurement functionality

Code	Description	
1	Flow (square root output)	★

Diagnostic functionality

Code	Description	
A	**Device** and **Loop Integrity** diagnostics	★
B	Enhanced Safety Instrumented Systems (SIS) proof testing and logging (includes **Loop Integrity** diagnostic)	★
C	**Process Intelligence** with **Plugged Impulse Line** diagnostic (includes enhanced SIS and **Loop Integrity**)	★

Performance class

Code	Description	
2	Ultra-For-Flow: 0.8% flow rate accuracy, 14:1 flow turndown, 20-year stability, 20-year limited warranty(1)	★
4	Classic: 1.25% flow rate accuracy, 8:1 flow turndown, 20-year stability	★

(1) *28:1 flow turn down with universal pressure range option "U"*

Fluid type

Code	Description	
L	Liquid	★
G	Gas	★
S	Steam	★

Line size

Code	Description	
020	2 in. (51 mm)	★
025	2½ in. (64 mm)	★
030	3 in. (80 mm)	★
035	3½ in. (89 mm)	★
040	4 in. (100 mm)	★
050	5 in. (125 mm)	★
060	6 in. (150 mm)	★
070	7 in. (175 mm)	★
080	8 in. (200 mm)	★
100	10 in. (250 mm)	★
120	12 in. (300 mm)	★
140	14 in. (350 mm)	
160	16 in. (400 mm)	
180	18 in. (450 mm)	
200	20 in. (500 mm)	
240	24 in. (600 mm)	
300	30 in. (750 mm)	
360	36 in. (900 mm)	
420	42 in. (1066 mm)	
480	48 in. (1210 mm)	
600	60 in. (1520 mm)	
720	72 in. (1820 mm)	
780	78 in. (1950 mm)	
840	84 in. (2100 mm)	
900	90 in. (2250 mm)	
960	96 in. (2400 mm)	

Pipe inside diameter (ID) range

Code	Description	
Z	Custom manufactured for customer-supplied pipe ID	★

Pipe material and mounting assembly material

Code	Description	
C	Carbon steel (A105)	★
S	316 stainless steel (SST)	★
G	Chrome-Moly Grade F-11	
N	Chrome-Moly Grade F-22	
J	Chrome-Moly Grade F-91	
0	No mounting (customer-supplied)	★

Piping orientation

Code	Description	
H	Horizontal piping	★
D	Vertical piping with downwards flow	★
U	Vertical piping with upwards flow	★

Annubar™ type

Code	Description	
P	Pak-Lok	★
F	Flanged with opposite side support	★
L	Flange-Lok	★
G	Gear-Drive Flo-Tap	★
M	Manual Flo-Tap	★

Sensor material

Code	Description	
S	316 stainless steel (SST)	★
H	Alloy C-276	

Sensor size

Code	Description	
1	Sensor size 1 — Line sizes 2 in. (50 mm) to 8 in. (200 mm)	★
2	Sensor size 2 — Line sizes 6 in. (150 mm) to 96 in. (2400 mm)	★
3	Sensor size 3 — Line sizes greater than 12 in. (300 mm)	★

Mounting type

Code	Description	
T1	Compression/threaded connection	★
A1	Class 150 RF American Society of Mechanical Engineers (ASME) B16.5	★
A3	Class 300 RF ASME B16.5	★

Code	Description	
A6	Class 600 RF ASME B16.5	★
A9	Class 900 RF ASME B16.5	
AF	Class 1500 RF ASME B16.5	
AT	Class 2500 RF ASME B16.5	
D1	DN PN16 flange	★
D3	DN PN40 flange	★
D6	DN PN100 flange	★
R1	Class 150 RTJ flange	
R3	Class 300 RTJ flange	
R6	Class 600 RTJ flange	
R9	Class 900 RTJ flange	
RF	Class 1500 RTJ flange	
RT	Class 2500 RTJ flange	

Opposite side support and packing gland

Code	Description			
0	No opposite side support or packing gland(1)			★
Opposite side support(2)				
C	NPT threaded opposite support assembly - extended tip			★
D	Welded opposite support assembly - extended tip			★
A	NPT threaded opposite support assembly - original (for retrofit)			
B	Welded opposite support assembly - original (for retrofit)			
Packing gland(3)				
Code	**Packing gland material**	**Rod material**	**Packing material**	
J	Stainless steel packing gland/cage nipple	Carbon steel	PTFE	
K	Stainless steel packing gland/cage nipple	Stainless steel	PTFE	
L	Stainless steel packing gland/cage nipple	Carbon steel	Graphite	
N	Stainless steel packing gland/cage nipple	Stainless steel	Graphite	
R	Alloy C-276 packing gland/cage nipple	Stainless steel	Graphite	

(1) *Required for Pak-Lok and Flange-Lok models.*
(2) *Required for flanged models.*
(3) *Required for Flo-Tap models.*

Isolation valve for Flo-tap models

Code	Description	
1	Gate valve, carbon steel	
2	Gate valve, stainless steel	
3	Gate valve, Alloy C-276	
5	Ball valve, carbon steel	
6	Ball valve, stainless steel	

Code	Description	
7	Ball valve, Alloy C-276	
0	Not applicable or customer-supplied	

Transmitter connection platform

Code	Description	
3	Direct-mount, integral 3-valve manifold	★
5	Direct-mount, 5-valve manifold	★
6	Direct-mount, high temperature 5-valve manifold	
7	Remote-mount NPT connections	★
8	Remote-mount SW connections	

Pressure range

Code	Description	
U(1)	Universal 28:1 flow turndown: 0 to 1,000 inH_2O (0 to 2.49 bar)	★
1	0 to 25 inH_2O (0 to 0.0622 bar)	★
2	0 to 250 inH_2O (0 to 0.6221 bar)	★
3	0 to 1,000 inH_2O (0 to 2.49 bar)	★
4	0 to 300 psi (0 to 20.7 bar)	★

(1) *Universal rane option is only available with diagnostic code A (**Loop Integrity** will be disabled).*

Isolating diaphragm material

Code	Description	
2	316L stainless steel (SST)	★
3	Alloy C-276	★
4	Alloy 400	
5	Tantalum	
6	Gold-plated Alloy 400 (includes graphite-filled PTFE O-ring)	
7	Gold-plated 316L SST	

Process temperature measurement

Code	Description	
N	No process temperature measurement input	★

Transmitter housing material

Code	Description	
A	Aluminum	★
S	Stainless steel (SST)	★

Housing conduit/cable threads

Code	Description	
1	½–14 NPT	★
2	M20 x 1.5	★
3(1)	G½	★

(1) *Transmitter conduit entry will be ½ NPT, and a ½ NPT to G½ thread adapter will be provided.*

Transmitter output

Code	Description	
A	4–20 mA with digital signal based on HART® protocol	★
S	4–20 mA with digital signal based on HART protocol and two integral relay switches	★

Additional options

Surface finish

Code	Description	
RL	Surface finish for low pipe Reynolds number in gas and steam	★
RH	Surface finish for high pipe Reynolds number in liquid	★

Installed in flanged pipe spool section

Code	Description	
H3	Class 150 flanged connection with Rosemount standard length and schedule	
H4	Class 300 flanged connection with Rosemount standard length and schedule	
H5	Class 600 flanged connection with Rosemount standard length and schedule	

Special shipment

Code	Description	
Y1	Mounting hardware shipped separately	★

Special dimensions

Code	Description	
VM	Variable mounting	
VT	Variable tip	
VS	Variable length spool section	

Manifold for remote mount option

Code	Description	
F2	3-valve manifold, stainless steel	★
F3	3-valve manifold, Alloy C-276	★
F6	5-valve manifold, stainless steel	★

Code	Description	
F7	5-valve manifold, Alloy C-276	★

Instrument connections for remote mount option

Code	Description	
G1	Needle valves, carbon steel	
G2	Needle valves, stainless steel	★
G3	Needle valves, Alloy C-276	
G5	Outside screw and yoke (OS&Y) gate valve, carbon steel	
G6	OS&Y gate valve, stainless steel	★
G7	OS&Y gate valve, Alloy C-276	

Material testing

Code	Description	
V1	Dye penetrant exam	

Material examination

Code	Description	
V2	Radiographic examination	

Flow calibration

Code	Description	
W1	Flow calibration (average K)	
W2	Special calibration	

Special inspection

Code	Description	
QC1	Visual and dimensional inspection with certificate	★
QC2	Inspection and performance certificate	★

Code conformance

Code	Description	
J2	American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME) B31.1	
J3	ANSI/ASME B31.3	

Country certification

Code	Description	
J1	Canadian Registration	★

Code	Description	
J6	European Pressure Equipment Directive (PED)	★
J8	Chinese Certificate of Special Equipment Type Test	

Local wireless device access

Code	Description	
BLE	Bluetooth® configuration and maintenance	★

Display type

Code	Description	
M6	Graphical backlit LCD display with **Quick Service** buttons	★
M8(1)	Remote graphical backlit LCD display and interface, **Quick Service** buttons	★

(1) *An electronic cable must be specified if ordering a remote display.*

Electronic cabling (for remote display)

Additional cable lengths are available up to 500 ft. (152.4 m). Consult the product configurator on Emerson.com/global or your local Emerson sales representative for more information.

Code	Description	
RA	25 ft. (7.62 m) of cable (gray color)	★
RB	50 ft. (15.2 m) of cable (gray color)	★
RC	100 ft. (30.5 m) of cable (gray color)	★
RN	25 ft. (7.62 m) of cable (blue color)	★
RP	50 ft. (15.2 m) of cable (blue color)	★
RQ	100 ft. (30.5 m) of cable (blue color)	★

Transmitter time response

Code	Description	
P6(1)	High-speed sensor time response	★

(1) *Only available with differential pressure range 2 or 3 and diagnostics option A (**Loop Integrity** diagnostic will be disabled).*

Tagging and fastener material

Code	Description	
Y2	316 stainless steel (SST) nameplate, top tag, wire-on tag, and fasteners	★

Custom tagging

Code	Description	
D6	Customer-specified barcode tag	★

RFID tagging

Code	Description	
Y3	RFID tag	★

Transient protection

Code	Description	
T1	Transient terminal block	★

Extended product warranty

Code	Description	
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

Pressure testing

Code	Description	
P1	Hydrostatic testing with certificate	
PX	Extended hydrostatic testing	

Special cleaning

Code	Description	
P2	Cleaning for special services	

Alarm limit

Code	Description	
C4	NAMUR alarm and saturation levels, high alarm	★
C5	NAMUR alarm and saturation levels, low alarm	★
C6(1)	Custom alarm and saturation signal levels, high alarm	★
C7(1)	Custom alarm and saturation signal levels, low alarm	★
C8	Low alarm (standard Rosemount alarm and saturation levels)	★

(1) *Options C6 and C7 require C1 and a Configuration Data Sheet.*

Ground screw

Code	Description	
X1	External ground screw assembly	★

Sensor fill fluid

Code	Description	
L1	Inert sensor fill fluid	★

O-ring

Glass-filled PTFE O-ring is standard.

Code	Description	
L2	Graphite-filled PTFE O-ring	★
L3	All graphite gasket	★

Conduit plug

Code	Description	
DO	316 stainless steel (SST) conduit plug	★

Conduit electrical connector

This is not available with explosion-proof or flameproof approvals.

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	
GM	A size mini, 4-pin, male connector (minifast®)	
GB	M20 ATEX-certified cable gland and plug	

Cold temperature

This is only available on pressure ranges 1–5, with silicone sensor fill fluid and stainless steel (SST) or Alloy C-276 isolating diaphragms and classic performance.

Code	Description	
BR5	-58 °F (-50 °C) cold temperature operation	★
BR6	-76 °F (-60 °C) cold temperature operation	★

Shipboard approvals

Code	Description	
SBS	American Bureau of Shipping	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★

Calibration certification

Code	Description	
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★

Material traceability certification

Code	Description	
Q8	Material traceability certification per EN 10204 3.1	★

Positive material identification (PMI)

PMI verification and certificate requires Q8.

Code	Description	
Q76	PMI verification and certificate	★

Quality certification for safety

Code	Description	
QT	Safety certified to IEC 61508 with certificate of Failure Mode, Effects, and Data Analysis (FMEDA)	★

NACE® certificate

Materials of construction comply with metallurgical requirements highlighted within NACE MR 0175/International Organization for Standardization (ISO) 15156 for sour oil field production environments.

Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

Code	Description	
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	
Q25	Certificate of compliance to NACE MR0103/ISO 17945 for wetted materials	

Product certifications

Code	Description	
K1	ATEX Flameproof, Intrinsic Safety, Zone 2 Increased Safety, Dust	★
E1	ATEX Flameproof, Dust	★
I1	ATEX Intrinsic Safety	★
N1	ATEX Zone 2 Increased Safety	★
K5	USA Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E5	USA Explosion-proof, Dust, Non-Incendive	★
I5	USA Intrinsic Safety, Non-incendive	★
K6	Canada Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E6	Canada Explosion-proof, Dust, Non-Incendive	★
I6	Canada Intrinsic Safety, Non-incendive	★
K7	IECEx Flameproof, Dust, Intrinsic Safety, Zone 2 Increased Safety	★
E7	IECEx Flameproof, Dust	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Zone 2 Increased Safety	★
KS	USA, Canada, IECEx and ATEX Flameproof, Intrinsic Safety, Dust, Zone 2 Increased Safety, Non-Incendive	★
KL	USA, Canada, IECEx, ATEX Intrinsic Safety	★

Rosemount 4051SFC Compact Flow Meter



- Compact conditioning flow meters reduce straight piping requirements to 2D upstream and 2D downstream from most flow disturbances.
- Simple installation of compact flow meters between any existing raised-face flanges.

VIEW PRODUCT > CONFIGURE >

Required model components

Model

Code	Description	
4051SFC	Compact Flow Meter	★

Measurement functionality

Code	Description	
1	Flow (square root output)	★

Diagnostic functionality

Code	Description	
A	**Device** and **Loop Integrity** diagnostics	★
B	Enhanced Safety Instrumented Systems (SIS) proof testing and logging (includes **Loop Integrity** diagnostic)	★
C	**Process Intelligence** with **Plugged Impulse Line** diagnostic (includes enhanced SIS and **Loop Integrity**)	★

Performance class

Code	Description	
2	Ultra-For-Flow: 0.75% flow rate accuracy, 14:1 flow turndown, 20-year stability, 20-year limited warranty(1)	★
4	Classic: 1.1% flow rate accuracy, 8:1 flow turndown, 20-year stability	★

(1) *28:1 flow turn down with universal pressure range option "U"*

Primary element technology

Code	Description	
C	Conditioning orifice plate	★
P	Orifice plate	★

Material type

Code	Description	
S	316 stainless steel (SST)	★

Line size

Code	Description	
005	½ in. (15 mm)	★
010	1 in. (25 mm)	★
015	1½ in. (40 mm)	★
020	2 in. (50 mm)	★
030	3 in. (80 mm)	★
040	4 in. (100 mm)	★
060	6 in. (150 mm)	★
080	8 in. (200 mm)	★
100	10 in. (250 mm)	★
120	12 in. (300 mm)	★

Primary element style

Code	Description	
N	Square edged	★

Primary element type

Code	Description	
040	0.40 Beta ratio	★
050	0.50 Beta ratio	★
065	0.65 Beta ratio	★

Transmitter connection platform

Code	Description	
3	Direct mount, integral 3-valve manifold	★
7	Remote mount, NPT connections	★

Pressure measurement

Code	Description	
CD	Differential pressure, Coplanar™	★

Pressure range

Code	Description	
U(1)	Universal 28:1 flow turndown: 0 to 1,000 inH_2O (0 to 2.49 bar)	★

Code	Description	
1	0 to 25 inH_2O (0 to 0.0622 bar)	★
2	0 to 250 inH_2O (0 to 0.6221 bar)	★
3	0 to 1,000 inH_2O (0 to 2.49 bar)	★
4	0 to 300 psi (0 to 20.7 bar)	★

(1) *Universal rane option is only available with diagnostic code A (**Loop Integrity** will be disabled).*

Isolating diaphragm material

Code	Description	
2(1)	316L stainless steel (SST)	★

(1) *Materials of construction comply with metallurgical requirements highlighted within NACE® MR0175/International Organization for Standardization (ISO) 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.*

Process temperature measurement

Code	Description	
N	No process temperature measurement input	★

Transmitter housing material

Code	Description	
A	Aluminum	★
S	Stainless steel (SST)	★

Housing conduit/cable threads

Code	Description	
1	½–14 NPT	★
2	M20 x 1.5	★
3(1)	G½	★

(1) *Transmitter conduit entry will be ½ NPT, and a ½ NPT to G½ thread adapter will be provided.*

Transmitter output

Code	Description	
A	4–20 mA with digital signal based on HART® protocol	★
S	4–20 mA with digital signal based on HART protocol and two integral relay switches	★

Additional options

Installation accessories

Code	Description	
AB	American National Standards Institute (ANSI) alignment ring (Class 150)(1)	★
AC	ANSI alignment ring (Class 300)(1)	★

Code	Description	
AD	ANSI alignment ring (Class 600)(1)	★
DG	DIN alignment ring (PN 16)	★
DH	DIN alignment ring (PN 40)	★
DJ	DIN alignment ring (PN 100)	★
JB	JIS alignment ring (10K)	
JR	JIS alignment ring (20K)	
JS	JIS alignment ring (40K)	

(1) *Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes.*

Remote adapters

Code	Description	
FE	Flange adapters 316 stainless steel (SST) (½-in. NPT)	★

High temperature application

Code	Description	
HT	Graphite valve packing (T_{max} = 850 °F [454 °C])	

Manifold for remote mount option

Code	Description	
F2	3-valve manifold, stainless steel	★
F6	5-valve manifold, stainless steel	★

Flow calibration

Code	Description	
WC	Flow calibration, 3-point, conditioning option C (all pipe schedules)	
WD	Flow calibration, 10-point, conditioning option C (all schedules)	

Special inspection

Code	Description	
QC1	Visual and dimensional inspection with certificate	★
QC7	Inspection and performance certificate	★

Code conformance

Code	Description	
J2	American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME) B31.1	
J3	ANSI/ASME B31.3	

Country certification

Code	Description	
J1	Canadian Registration	
J8	Chinese Certificate of Special Equipment Type Test	

Local wireless device access

Code	Description	
BLE	Bluetooth® configuration and maintenance	★

Display type

Code	Description	
M6	Graphical backlit LCD display with **Quick Service** buttons	★
M8(1)	Remote graphical backlit LCD display and interface, **Quick Service** buttons	★

(1) *An electronic cable must be specified if ordering a remote display.*

Electronic cabling (for remote display)

Additional cable lengths are available up to 500 ft. (152.4 m). Consult the product configurator on Emerson.com/global or your local Emerson sales representative for more information.

Code	Description	
RA	25 ft. (7.62 m) of cable (gray color)	★
RB	50 ft. (15.2 m) of cable (gray color)	★
RC	100 ft. (30.5 m) of cable (gray color)	★
RN	25 ft. (7.62 m) of cable (blue color)	★
RP	50 ft. (15.2 m) of cable (blue color)	★
RQ	100 ft. (30.5 m) of cable (blue color)	★

Transmitter time response

Code	Description	
P6(1)	High-speed sensor time response	★

(1) *Only available with differential pressure range 2 or 3 and diagnostics option A (**Loop Integrity** diagnostic will be disabled).*

Tagging and fastener material

Code	Description	
Y2	316 stainless steel (SST) nameplate, top tag, wire-on tag, and fasteners	★

Custom tagging

Code	Description	
D6	Customer-specified barcode tag	★

RFID tagging

Code	Description	
Y3	RFID tag	★

Transient protection

Code	Description	
T1	Transient terminal block	★

Extended product warranty

Code	Description	
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

Pressure testing

Code	Description	
P1	Hydrostatic testing with certificate	

Special cleaning

Code	Description	
P2	Cleaning for special services	

Alarm limit

Code	Description	
C4	NAMUR alarm and saturation levels, high alarm	★
C5	NAMUR alarm and saturation levels, low alarm	★
C6(1)	Custom alarm and saturation signal levels, high alarm	★
C7(1)	Custom alarm and saturation signal levels, low alarm	★
C8	Low alarm (standard Rosemount alarm and saturation levels)	★

(1) *Options C6 and C7 require C1 and a Configuration Data Sheet.*

Ground screw

Code	Description	
X1	External ground screw assembly	★

Sensor fill fluid

Code	Description	
L1	Inert sensor fill fluid	★

O-ring

Code	Description	
L2	Graphite-filled PTFE O-ring	★

Conduit plug

Code	Description	
DO	316 stainless steel (SST) conduit plug	★

Conduit electrical connector

This is not available with explosion-proof or flameproof approvals.

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	
GM	A size mini, 4-pin, male connector (minifast®)	
GB	M20 ATEX-certified cable gland and plug	

Cold temperature

This is only available on pressure ranges 1–5, with silicone sensor fill fluid and stainless steel (SST) or Alloy C-276 isolating diaphragms and classic performance.

Code	Description	
BR5	-58 °F (-50 °C) cold temperature operation	★
BR6	-76 °F (-60 °C) cold temperature operation	★

Shipboard approvals

Code	Description	
SBS	American Bureau of Shipping	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★

Calibration certification

Code	Description	
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★

Material traceability certification

Code	Description	
Q8	Material traceability certification per EN 10204 3.1	★

Positive material identification (PMI)

PMI verification and certificate requires Q8.

Code	Description	
Q76	PMI verification and certificate	★

Quality certification for safety

Code	Description	
QT	Safety certified to IEC 61508 with certificate of Failure Mode, Effects, and Data Analysis (FMEDA)	★

NACE® certificate

Materials of construction comply with metallurgical requirements highlighted within NACE MR 0175/International Organization for Standardization (ISO) 15156 for sour oil field production environments.

Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

Code	Description	
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	
Q25	Certificate of compliance to NACE MR0103/ISO 17945 for wetted materials	

Product certifications

Code	Description	
K1	ATEX Flameproof, Intrinsic Safety, Zone 2 Increased Safety, Dust	★
E1	ATEX Flameproof, Dust	★
I1	ATEX Intrinsic Safety	★
N1	ATEX Zone 2 Increased Safety	★
K5	USA Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E5	USA Explosion-proof, Dust, Non-Incendive	★
I5	USA Intrinsic Safety, Non-incendive	★
K6	Canada Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E6	Canada Explosion-proof, Dust, Non-Incendive	★
I6	Canada Intrinsic Safety, Non-incendive	★
K7	IECEx Flameproof, Dust, Intrinsic Safety, Zone 2 Increased Safety	★
E7	IECEx Flameproof, Dust	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Zone 2 Increased Safety	★
KS	USA, Canada, IECEx and ATEX Flameproof, Intrinsic Safety, Dust, Zone 2 Increased Safety, Non-Incendive	★
KL	USA, Canada, IECEx, ATEX Intrinsic Safety	★

Rosemount 4051SFP Integral Orifice Flow Meter



- Precision honed pipe section for increased accuracy in small line sizes.
- Self-centering plate design prevents alignment errors that magnify measurement inaccuracies in small line sizes.

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.

VIEW PRODUCT > CONFIGURE >

Required model components

Model

Code	Description	
4051SFP	Integral Orifice Flow Meter	★

Measurement functionality

Code	Description	
1	Flow (square root output)	★

Diagnostic functionality

Code	Description	
A	**Device** and **Loop Integrity** diagnostics	★
B	Enhanced Safety Instrumented Systems (SIS) proof testing and logging (includes **Loop Integrity** diagnostic)	★
C	**Process Intelligence** with **Plugged Impulse Line** diagnostic (includes enhanced SIS and **Loop Integrity**)	★

Performance class

Code	Description	
2	Ultra-For-Flow: 1.05% flow rate accuracy, 14:1 flow turndown, 20-year stability, 20-year limited warranty(1)	★
4	Classic: 1.35% flow rate accuracy, 8:1 flow turndown, 20-year stability	★

(1) *28:1 flow turn down with universal pressure range option "U".*

Body material and type

Code	Description	
F	316 stainless steel (SST), 4-bolt	★

Line size

Code	Description	
005	½ in. (15 mm)	★
010	1 in. (25 mm)	★
015	1½ in. (40 mm)	★

Process connection (primary)

Code	Description	
T1	NPT female body (not available with thermowell and RTD)	★
S1	Socket weld body (not available with thermowell and RTD)	★
P1	Pipe ends: NPT threaded	★
P2	Pipe ends: beveled	★
A1	Pipe ends: flanged, RF, American Society of Mechanical Engineers (ASME) B16.5 Class 150, slip-on	★
A3	Pipe ends: flanged, RF, ASME B16.5 Class 300, slip-on	★
A6	Pipe ends: flanged, RF, ASME B16.5 Class 600, slip-on	★
D1	Pipe ends: flanged, RF, DIN PN16, slip-on	★
D2	Pipe ends: flanged, RF, DIN PN40, slip-on	★
D3	Pipe ends: flanged, RF, DIN PN100, slip-on	★
W1	Pipe ends: flanged, RF, ASME B16.5 Class 150, weld-neck	★
W3	Pipe ends: flanged, RF, ASME B16.5 Class 300, weld-neck	★
W6	Pipe ends: flanged, RF, ASME B16.5 Class 600, weld-neck	★
W9	Pipe ends: flanged, RF, ASME B16.5 Class 900, weld-neck	★
R1	Pipe ends: flanged, RTJ , ASME B16.5 Class 150, slip-on	
R3	Pipe ends: flanged, RTJ , ASME B16.5 Class 300, slip-on	
R6	Pipe ends: flanged, RTJ , ASME B16.5 Class 600, slip-on	
R9	Pipe ends: flanged, RTJ , ASME B16.5 Class 900, weld-neck	

Orifice plate material

Code	Description	
S	316/316L stainless steel (SST)	★
H	Alloy C-276	
M	Alloy 400	

Bore size option

Code	Description	
0010	0.01 in. (0.25 mm) for ½-in. pipe	
0014	0.014 in. (0.36 mm) for ½-in. pipe	
0020	0.02 in. (0.51 mm) for ½-in. pipe	
0034	0.034 in. (0.86 mm) for ½-in. pipe	

Code	Description	
0066	0.066 in. (1.68 mm) for ½-in. pipe	★
0109	0.109 in. (2.77 mm) for ½-in. pipe	★
0150	0.15 in. (3.81 mm) for 1-in. pipe	★
0160	0.16 in. (4.06 mm) for ½-in. pipe	★
0196	0.196 in. (4.98 mm) for ½-in. pipe	★
0250	0.25 in. (6.35 mm) for 1-in. pipe	★
0260	0.26 in. (6.6 mm) for ½-in. pipe	★
0295	0.295 in. (7.49 mm) for 1½-in. pipe	★
0340	0.34 in. (8.64 mm) for ½-in. pipe	★
0345	0.345 in. (8.76 mm) for 1-in. pipe	★
0376	0.376 in. (9.55 mm) for 1½-in. pipe	★
0500	0.5 in. (12.7 mm) for 1-in. pipe	★
0512	0.512 in. (13 mm) for 1½-in. pipe	★
0630	0.63 in. (16 mm) for 1-in. pipe	★
0748	0.748 in. (19 mm) for 1½-in. pipe	★
0800	0.8 in. (20.32 mm) for 1-in. pipe	★
1022	1.022 in. (25.96 mm) for 1½-in. pipe	★
1184	1.184 in. (30.07 mm) for 1½-in. pipe	★
XXXX	Special bore size (X.XXX in.)	★

Transmitter connection platform

Code	Description	
D3	Direct mount, 3-valve manifold, stainless steel (SST)	★
D4	Direct-mount, 3-valve manifold, Alloy C-276	
D5	Direct-mount, 5-valve manifold, SST	★
D6	Direct-mount, 5-valve manifold, Alloy C-276	
R3	Remote-mount, 3-valve manifold, SST	★
R4	Remote-mount, 3-valve manifold, Alloy C-276	
R5	Remote-mount, 5-valve manifold, SST	★
R6	Remote-mount, 5-valve manifold, Alloy C-276	

Pressure measurement

Code	Description	
CD	Differential pressure, Coplanar™	★

Pressure range

Code	Description	
U[(1)]	Universal 28:1 flow turndown: 0 to 1,000 inH_2O (0 to 2.49 bar)	★

Code	Description	
1	0 to 25 inH_2O (0 to 0.0622 bar)	★
2	0 to 250 inH_2O (0 to 0.6221 bar)	★
3	0 to 1,000 inH_2O (0 to 2.49 bar)	★
4	0 to 300 psi (0 to 20.7 bar)	★

(1) *Universal rane option is only available with diagnostic code A (**Loop Integrity** will be disabled).*

Isolating diaphragm material

Code	Description	
2(1)	316L stainless steel (SST)	★

(1) *Materials of construction comply with metallurgical requirements highlighted within NACE® MR0175/International Organization for Standardization (ISO) 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.*

Process temperature measurement

Code	Description	
N	No process temperature measurement input	★

Transmitter housing material

Code	Description	
A	Aluminum	★
S	Stainless steel (SST)	★

Housing conduit/cable threads

Code	Description	
1	½–14 NPT	★
2	M20 x 1.5	★
3(1)	G½	★

(1) *Transmitter conduit entry will be ½ NPT, and a ½ NPT to G½ thread adapter will be provided.*

Transmitter output

Code	Description	
A	4–20 mA with digital signal based on HART® protocol	★
S	4–20 mA with digital signal based on HART protocol and two integral relay switches	★

Additional options

Transmitter/body bolt material

Code	Description	
GT	Extended temperature gaskets, studs, and nuts (850 °F [454 °C])	

Optional connection

Code	Description	
G1	DIN 19213 transmitter connection	★

Material testing

Code	Description	
V1	Dye penetrant exam	

Material examination

Code	Description	
V2	Radiographic examination	

Flow calibration

Code	Description	
WD	Discharge coefficient verification	

Special inspection

Code	Description	
QC1	Visual and dimensional inspection with certificate	★
QC7	Inspection and performance certificate	★

Code conformance

Code	Description	
J2	American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME) B31.1	
J3	ANSI/ASME B31.3	

Country certification

Code	Description	
J1	Canadian Registration	
J6	European Pressure Equipment Directive (PED)	★

Local wireless device access

Code	Description	
BLE	Bluetooth® configuration and maintenance	★

Display type

Code	Description	
M6	Graphical backlit LCD display with **Quick Service** buttons	★

Code	Description	
M8(1)	Remote graphical backlit LCD display and interface, **Quick Service** buttons	★

(1) *An electronic cable must be specified if ordering a remote display.*

Electronic cabling (for remote display)

Additional cable lengths are available up to 500 ft. (152.4 m). Consult the product configurator on Emerson.com/global or your local Emerson sales representative for more information.

Code	Description	
RA	25 ft. (7.62 m) of cable (gray color)	★
RB	50 ft. (15.2 m) of cable (gray color)	★
RC	100 ft. (30.5 m) of cable (gray color)	★
RN	25 ft. (7.62 m) of cable (blue color)	★
RP	50 ft. (15.2 m) of cable (blue color)	★
RQ	100 ft. (30.5 m) of cable (blue color)	★

Transmitter time response

Code	Description	
P6(1)	High-speed sensor time response	★

(1) *Only available with differential pressure range 2 or 3 and diagnostics option A (**Loop Integrity** diagnostic will be disabled).*

Tagging and fastener material

Code	Description	
Y2	316 stainless steel (SST) nameplate, top tag, wire-on tag, and fasteners	★

Custom tagging

Code	Description	
D6	Customer-specified barcode tag	★

RFID tagging

Code	Description	
Y3	RFID tag	★

Transient protection

Code	Description	
T1	Transient terminal block	★

Extended product warranty

Code	Description	
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

Pressure testing

Code	Description	
P1	Hydrostatic testing with certificate	

Special cleaning

Code	Description	
P2	Cleaning for special services	

Alarm limit

Code	Description	
C4	NAMUR alarm and saturation levels, high alarm	★
C5	NAMUR alarm and saturation levels, low alarm	★
C6(1)	Custom alarm and saturation signal levels, high alarm	★
C7(1)	Custom alarm and saturation signal levels, low alarm	★
C8	Low alarm (standard Rosemount alarm and saturation levels)	★

(1) *Options C6 and C7 require C1 and a Configuration Data Sheet.*

Ground screw

Code	Description	
X1	External ground screw assembly	★

Sensor fill fluid

Code	Description	
L1	Inert sensor fill fluid	★

O-ring

Glass-filled PTFE O-ring is standard.

Code	Description	
L2	Graphite-filled PTFE O-ring	★
L3	All graphite gasket	★

Conduit plug

Code	Description	
DO	316 stainless steel (SST) conduit plug	★

Conduit electrical connector

This is not available with explosion-proof or flameproof approvals.

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	

Code	Description	
GM	A size mini, 4-pin, male connector (minifast®)	
GB	M20 ATEX-certified cable gland and plug	

Cold temperature

This is only available on pressure ranges 1–5, with silicone sensor fill fluid and stainless steel (SST) or Alloy C-276 isolating diaphragms and classic performance.

Code	Description	
BR5	-58 °F (-50 °C) cold temperature operation	★
BR6	-76 °F (-60 °C) cold temperature operation	★

Shipboard approvals

Code	Description	
SBS	American Bureau of Shipping	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★

Calibration certification

Code	Description	
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★

Material traceability certification

Code	Description	
Q8	Material traceability certification per EN 10204 3.1	★

Positive material identification (PMI)

PMI verification and certificate requires Q8.

Code	Description	
Q76	PMI verification and certificate	★

Quality certification for safety

Code	Description	
QT	Safety certified to IEC 61508 with certificate of Failure Mode, Effects, and Data Analysis (FMEDA)	★

NACE® certificate

Materials of construction comply with metallurgical requirements highlighted within NACE MR 0175/International Organization for Standardization (ISO) 15156 for sour oil field production environments.

Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

Code	Description	
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	
Q25	Certificate of compliance to NACE MR0103/ISO 17945 for wetted materials	

Product certifications

Code	Description	
K1	ATEX Flameproof, Intrinsic Safety, Zone 2 Increased Safety, Dust	★
E1	ATEX Flameproof, Dust	★
I1	ATEX Intrinsic Safety	★
N1	ATEX Zone 2 Increased Safety	★
K5	USA Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E5	USA Explosion-proof, Dust, Non-Incendive	★
I5	USA Intrinsic Safety, Non-incendive	★
K6	Canada Explosion-proof, Dust, Intrinsic Safety, Non-Incendive	★
E6	Canada Explosion-proof, Dust, Non-Incendive	★
I6	Canada Intrinsic Safety, Non-incendive	★
K7	IECEx Flameproof, Dust, Intrinsic Safety, Zone 2 Increased Safety	★
E7	IECEx Flameproof, Dust	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Zone 2 Increased Safety	★
KS	USA, Canada, IECEx and ATEX Flameproof, Intrinsic Safety, Dust, Zone 2 Increased Safety, Non-Incendive	★
KL	USA, Canada, IECEx, ATEX Intrinsic Safety	★

Specifications

Performance specifications

Conformance to specification

Technology leadership, advanced manufacturing techniques, and statistical process control ensure pressure measurement specification conformance to ±3σ or better.

DP Flow Meter specification conforms to ±2σ or better.

Flow performance

NOTICE
These flow measurement accuracies assume a constant density, viscosity, and expansibility factor.

NOTICE
Range 1 flow meters experience an additional uncertainty up to 0.9%. Consult your Emerson representative for exact specifications.

NOTICE
Consult the DP Flow Sizing and Selection Tool on Emerson.com for performance specifications related to universal range flow meters.

Table 1: Flow Meter Performance Specifications

Flow performance specifications assume the device only uses differential pressure (DP) readings without pressure and temperature compensation.

Models	Ultra	Classic	Ultra-For-Flow
Annubar™ flow meter Rosemount 4051SFA			
Ranges 2–3	±0.95% of flow rate at 8:1 flow turndown	±1.25% of flow rate at 8:1 flow turndown	±0.80% of flow rate at 14:1 flow turndown
Compact conditioning orifice flow meter 4051SFC_C			
Ranges 2–3			
β = 0.4	±0.90% of flow rate at 8:1 flow turndown	±1.10% of flow rate at 8:1 flow turndown	±0.75% of flow rate at 14:1 flow turndown
β = 0.50, 0.65	±1.25% of flow rate at 8:1 flow turndown	±1.40% of flow rate at 8:1 flow turndown	±1.15% of flow rate at 14:1 flow turndown
Compact orifice flow meter 4051SFC_P (1)			
Ranges 2–3	±1.35% of flow rate at 8:1 flow turndown	±1.80% of flow rate at 8:1 flow turndown	±1.30% of flow rate at 14:1 flow turndown
Integral orifice flow meter (4051SFP)			
Ranges 2–3			
Bore < 0.160	±2.65% of flow rate at 8:1 flow turndown	±2.70% of flow rate at 8:1 flow turndown	±2.60% of flow rate at 14:1 flow turndown
0.160 ≤ Bore < 0.500	±1.70% of flow rate at 8:1 flow turndown	±1.80% of flow rate at 8:1 flow turndown	±1.60% of flow rate at 14:1 flow turndown
0.500 ≤ Bore ≤ 1.000	±1.25% of flow rate at 8:1 flow turndown	±1.35% of flow rate at 8:1 flow turndown	±1.15% of flow rate at 14:1 flow turndown

Table 1: Flow Meter Performance Specifications *(continued)*

1.000 < Bore	±1.70% of flow rate at 8:1 flow turndown	±1.80% of flow rate at 8:1 flow turndown	±1.60% of flow rate at 14:1 flow turndown

(1) *For line sizes less than 2 in. (50 mm) or greater than 8 in. (200 mm), add an additional 5% uncertainty.*

Long term stability

Table 2: Long Term Stability

Model	Range	Ultra	Classic	Ultra-ForFlow
Rosemount 4051S_CD	Ranges 2-5	±0.1% upper range limit (URL) for 20 years	±0.15% URL for 20 years	±0.1% URL for 20 years

Warranty

Note
See Emerson Terms and Conditions of Sale for warranty details.

Table 3: Warranty

Models	Ultra and Ultra-For-Flow(1)	Classic(2)	Optional extended warranty(3)
All Rosemount 4051S DP Flow Meters	20-year limited warranty	1-year limited warranty	WR3: 3-year limited warranty WR5: 5-year limited warranty

(1) *Rosemount Ultra and Ultra-For-Flow transmitters have a limited warranty of 20 years from date of shipment. All other provisions of Emerson standard limited warranty remain the same.*
(2) *Goods are warranted for 12 months from the date of initial installation or 18 months from the date of shipment by seller, whichever period expires first.*
(3) *Rosemount extended warranties have a limited warranty of three or five years from date of shipment.*

Dynamic performance

Table 4: Total Time Response at 75 °F (24 °C), Includes Dead Time

	4051SF
Standard	Differential pressure (DP) ranges 2-5: 80 ms Range 1: 230 ms Range 0: 340 ms Range U: 80 ms
High-speed resonse (option P6)	DP ranges 2-3: 40 ms

Table 5: Dead Time

Response time option	4051SF
Standard	40 ms
High-speed time response (option P6)	20 ms

Table 6: Sensor Update Rate

Response Time Option	4051SF
Standard	48 updates per second

Table 6: Sensor Update Rate *(continued)*

Response Time Option	4051SF
High-speed time response (option P6)	167 updates per second

Ambient temperature effects

Transmitter with Coplanar™ Sensor Module (Single Variable)

Table 7: Rosemount 4051S_CD

	Ultra per 50 °F (28 °C)	Classic per 50 °F (28 °C)	Ultra for flow
Ranges 2–5	±(0.009% upper range limit (URL) + 0.025% span) from 1:1 to 10:1; ±(0.018% URL + 0.08% span) from >10:1 to 200:1	±(0.0125% URL +0.0625% span) from 1:1 to 5:1; ±(0.025% URL + 0.125% span) from >5:1 to 150:1	±0.13% of reading up to 8:1 DP turndown from URL; ±(0.0187% URL + 0.13% reading) > 8:1 and ≤ 100:1 DP turndown from URL
Range 0	±(0.25% URL + 0.05% span) from 1:1 to 30:1	±(0.25% URL + 0.05% span) from 1:1 to 30:1	N/A
Range 1	±(0.1% URL + 0.25% span) from 1:1 to 50:1	±(0.1% URL + 0.25% span) from 1:1 to 50:1	N/A
U	±(0.009% URL + 0.025% span) from 1:1 to 10:1 ±(0.18% URL + 0.8% span) from > 10:1 to 200:1 ±(0.0024% URL + 3.205% span) from > 200:1 to 800:1	N/A	N/A

Line pressure effect

Table 8: Line Pressure Effect

Rosemount 4051S_CD 4051SF (differential pressure [DP] measurement only)	Ultra and Ultra-For-Flow	Classic
Zero error(1)		
Range 2–3	± 0.025% URL per 1000 psi (68.95 bar)	± 0.05% URL per 1000 psi (68.95 bar)
Range 0	± 0.125% URL per 100 psi (6.89 bar)	± 0.125% URL per 100 psi (6.89 bar)
Range 1	± 0.25% URL per 1000 psi (68.95 bar)	± 0.25% URL per 1000 psi (68.95 bar)
Span error(2)		
Range 2–3	± 0.1% of reading per 1000 psi (68.95 bar)	± 0.1% of reading per 1000 psi (68.95 bar)
Range 0	± 0.15% of reading per 100 psi (6.89 bar)	± 0.15% of reading per 100 psi (6.89 bar)
Range 1	± 0.40% of reading per 1000 psi (68.95 bar)	± 0.40% of reading per 1000 psi (68.95 bar)

(1) *Zero error can be removed by performing a zero trim at line pressure.*
(2) *Specifications for option code P0 are two times those shown above.*

Mounting position effect

Table 9: Mounting Position Effect

Models		Ultra, Ultra-For-Flow, Classic, and Classic MV
Rosemount 4051S_CD		Zero shifts up to ±1.25 inH_2O (3.11 mbar), which can be zeroed span: no effect
4051S_CA or 4051S_T		Zero shifts to ±2.5 inH_2O (6.22 mbar), which can be zeroed span: no effect
4051SF	DP Sensor	Zero shifts up to ±1.25 inH_2O (3.11 mbar), which can be zeroed span: no effect

Vibration effect

Rosemount 4051SFC

- Vibration structural limits
  - Qualified per the requirements of IEC61298-3 (2008) for field with general application or pipeline with low vibration level (10–1000 Hz test frequency range, 0.15 mm displacement peak amplitude, 20 m/s^2 acceleration amplitude).
  - The weight and length of the transmitter assembly shall not exceed 9 lb. (4,08 kg) and 8.60 in. (218,44 mm).
- Vibration Performance Specifications
  - Less than ±0.1 percent of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Note
SST temperature housing is not recommended with primary element technology A in application with mechanical vibration.

Rosemount 4051SFA

- Vibration Structural Limits
  - Due to wide variation in Annubar™ flow meter models, no structural limits are specified. Please contact your local Emerson representative for application questions.
- Vibration Performance Specifications
  - Less than ±0.1 percent of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Rosemount 4051SFP

- Vibration Structural Limits
  - Qualified per the requirements of IEC60068-2-6 (2007) for field with general application or pipeline with low vibration level (10 to 1000 Hz test frequency range, 0.075 mm displacement peak amplitude, 10 m/s^2 acceleration amplitude).
  - The weight of the transmitter assembly shall not exceed 12.6 lb (5,72 kg).
- Vibration Performance Specifications
  - Less than ±0.1 percent of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Power supply effect

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

Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation is less than 1 percent (< 1%) span during EMC disturbance.

Note
During surge event, device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Transient protection

Tested in accordance with the Institute of Electrical and Electronics Engineers (IEEE) C62.41.2-2002, Location Category B

- 6 kV crest, 100 kHz (0.5 µs)
- 3 kA crest (8 × 20 µs)
- 6 kV crest (1.2 × 50 µs)

Functional specifications

Range and sensor limits

Table 10: Flow Meter with Coplanar™ Differential Module

Range	Minimum span		Range limits	
	Ultra and Ultra for Flow	Classic and classic MV	Upper (URL)	Lower range limit (LRL)(1)
0	0.1 inH_2O (0.25 mbar)	0.1 inH_2O (0.25 mbar)	3.0 inH_2O 7.46 mbar	–3.0 inH_2O -7.46 mbar
1	0.5 inH_2O (1.24 mbar)	0.5 inH_2O (1.24 mbar)	25.0 inH_2O (62.21 mbar)	–25.0 inH_2O (–62.21 mbar)
2	1.25 inH_2O (3.11 mbar)	1.67 inH_2O (4.14 mbar)	250.0 inH_2O (621.6 mbar)	–250.0 inH_2O (-621.6 mbar)
3	5.0 inH_2O (12.43 mbar)	6.67 inH_2O (16.58 mbar)	1000.0 inH_2O (2.49 bar)	–1000.0 inH_2O (–2.49 bar)
4	1.5 psi (103.42 mbar)	2.0 psi (137.9 mbar)	300.0 psi (20.68 bar)	–300.0 psi (–20.7 bar)
5	10.0 psi (689.48 mbar)	13.33 psi (919.3 mbar)	2000.0 psi (137.9 bar)	– 2000.0 psi (–137.9 bar)
U	1.25 inH_2O (3.11 mbar)	1.25 inH_2O (3.11 mbar)	1000 inH_2O (2.49 bar)	-1000 inH_2O (-2.49 bar)

(1) *The LRL is 0 inH_2O (0 mbar) for Ultra-For-Flow performance class and Rosemount 4051S Flow Meters.*

4–20 mA HART® protocol

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

The 2-wire 4–20 mA is user-selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal is available to any host that conforms to the HART protocol.

Power supply

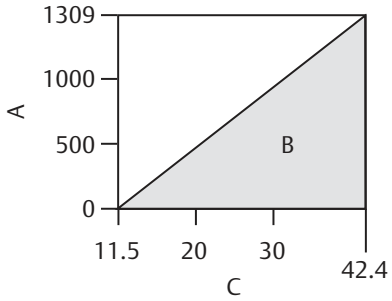
External power supply required. Standard transmitter (4–20 mA) operates on 11.5 to 42.4 Vdc with no load.

Load limitations

Maximum loop resistance is determined by the voltage level of the external power supply described by:

Maximum loop resistance = 42.37 × (power supply voltage – 11.5)

Communication requires a minimum loop resistance of 250 Ω.



A. Load (ohms)
B. Operating region
C. Voltage (Vdc)

Indication

The graphical backlit LCD display provides a 128 x 128 pixel display with a backlight. You can enable or disable the display via HART. The LCD display module can be rotated via software controls but cannot be repositioned physically on the unit.

The display also functions as an LOI, with two configuration buttons provided for the user to navigate menus.

The display also has a number of additional configuration parameters that can be set up: Add a GP/AP unit label, setting of the decimal separator between either a comma or period, ability to customize the number of significant digits shown, and set the display language. The languages include:

- English
- Chinese
- French
- German
- Italian
- Portuguese
- Spanish

The remote digital display includes a 4-wire communication cable that carries signal and power lines between the two terminal blocks in the remote meter system.

Configuration buttons

Quick service buttons included with the digital display allow for straightforward commissioning using a simple menu underneath the housing cover. The quick service buttons allow users to zero, re-range their device, perform a loop test, view configuration, and rotate the graphical LCD display screen in the field.

Analog zero and span included with the digital display changes analog value and can be used to re-range the transmitter with an applied pressure.

Bluetooth® Connectivity

Typical range: At least 50 ft. (15 m) line of sight. Maximum communication range will vary depending on orientation, obstacles (person, metal, wall, etc.), or electromagnetic environment.

Advanced diagnostics

Advanced diagnostics on Rosemount 4051S DP Flow Meters provide complete coverage from the process to control room.

The diagnostic capabilities progressively enhance from option A to option B, culminating in the most advanced features available in option C.

The **Loop Integrity** diagnostic proactively detects and notifies you of changes in the electrical loop before they affect your process operation. Example loop problems that can be detected include, corrosion of terminals, water in the terminal compartment, and unstable power supplies.

The **Enhanced SIS and proof testing** capability provides improved usability when performing partial and comprehensive proof tests. The user interface of the transmitter includes guided methods to make performing proof tests quick and easy. In addition, the in-situ partial proof test provides expanded partial proof test coverage without the need for an external pressure source. Proof test logs are also included so historical information can be accessed at any time.

The **Plugged Impulse Line** diagnostic uses statistical processing technology to detect plugging in impulse piping that may prevent the transmitter from obtaining an accurate process reading. It can also detect and alert you to other process connection issues, such as plugged Annubar™ or orifice plate process taps.

The **Process Intelligence** diagnostic also uses statistical processing technology by monitoring the standard deviation and coefficient of variation which can then be used to detect process and process equipment anomalies including but not limited to:

- Furnace flame instability
- Pump cavitation
- Distillation column flooding
- Fluid composition change
- Entrained air
- Agitation loss
- Process leak

Option Code A includes:	Option Code B includes:	Option Code C includes:
■ Basic transmitter diagnostics ■ Loop integrity ■ Logging capabilities	■ Basic transmitter diagnostics ■ Loop integrity ■ Logging capabilities ■ Enhanced SIS proof testing with in-situ	■ Basic transmitter diagnostics ■ Loop integrity ■ Logging capabilities ■ Enhanced SIS proof testing with in-situ ■ Process intelligence ■ Plugged impulse line

Relay switch functionality (available with output protocol code S)

Rosemount 4051S DP Flow Meters support two integral high voltage, high current double pole changeover (DPCO) switches connected directly to the transmitter.

An integral relay switch takes the traditional pressure relay switch and embeds it into the transmitter. On the 4051S, the relay switches are located in the transmitter terminal block (transient protection included). The relays are controlled by the transmitter measurement and are configured using the process alert functionality.

Relay power

The relay switches must be powered by a separate supply from the transmitter power.

As shown in Figure 1, there are separate dedicated terminals for the relay power. The power supplied to the relays must be able to sufficiently drive the electromechanical relay coils of both switches to activate them. If using DC power, the terminals are polarity sensitive. If using AC power, there is no polarity sensitivity.

- Transmitter power is 11.5 to 42.4 Vdc.
- Relay power voltage is 21.5 to 60 Vdc or 20 to 264 Vac, 50.60 Hz.
- Relay power current is 5 A maximum resistive load, 3.5 A maximum inductive load.

Table 11 shows the Relay 1 and Relay 2 load power requirements.

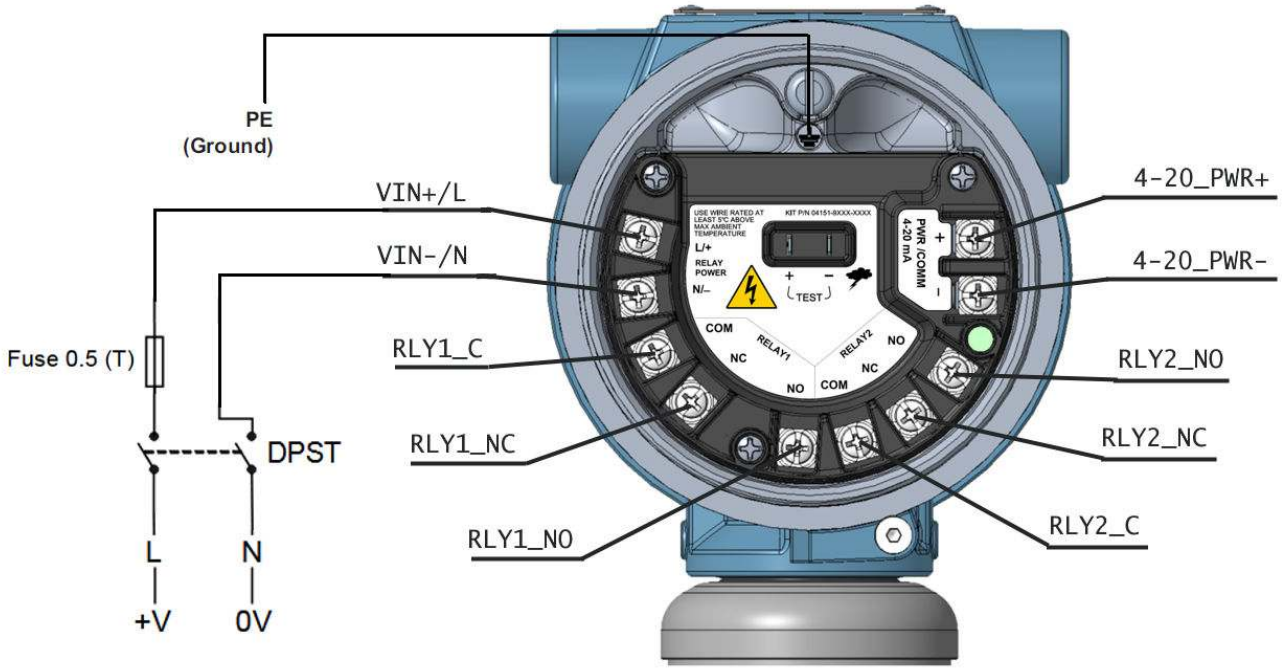
Table 11: Relay Power

Parameter		Resistive load	Inductive load
cos ϕ		1	0.4
L/R		0 ms	7 ms
I_{Max}		5 A	3.5 A
U_{MAX}	ac	250 V	250 V
U_{MAX}	dc	30 V	30 V
O_{MAX}	ac	1,250 VA	875 VA
O_{MAX}	dc	240 W	170 W

⚠ WARNING

A double pole, single throw (DPST) On/Off switch must be fitted for safe disconnection of the power supply. Fit the DPST switch as near as possible to the pressure relay switch. Keep the DPST switch free of obstructions. Label the DPST switch to indicate it is the supply disconnection device for the power relay switch.

Figure 1: Relay Switches



A. PE (ground)
B. Fuse 0.5 (T)
C. DPST

Overpressure limits

Transmitters withstand the following limits without damage:

Table 12: Maximum Overpressure Limits for Rosemount 4051S_CD

The pressure that can be applied to the process input (single side) without damage to the transmitter. The overpressure limit of differential pressure (DP) sensor with the P0 option is 6,170 psig (425.4 bar).

Range	Limit
0	750 psi (51.7 bar)
1	2,000 psi (137.9 bar)
2	3,626 psi (250.0 bar)
3	3,626 psi (250.0 bar)
4	3,626 psi (250.0 bar)
5	3,626 psi (250.0 bar)
U	2,000 psi (137.9 bar)

Static pressure limits

Table 13: Static Pressure Limits

Operates within specifications between static line pressures of:

Range	Rosemount 4051S_CD[1]
0	0.5 psia to 750 psig (0.03 bar to 51.71 bar)
1	0.5 psia to 2,000 psig (0.03 bar to 137.90 bar)
2	0.5 psia to 3,626 psig (0.03 bar to 250.00 bar)
3	0.5 psia to 3,626 psig (0.03 bar to 250.00 bar)
4	0.5 psia to 3,626 psig (0.03 bar to 250.00 bar)
5	0.5 psia to 3,626 psig (0.03 bar to 250.00 bar)
U	0.5 psia to 2,000 psig (0.03 bar to 137.90 bar)

(1) *The static pressure limit of a differential pressure (DP) Sensor with the P0 option is 6,170 psig (425.4 bar).*

Maximum working pressure limits

Maximum working pressure is the maximum pressure allowed for normal transmitter operation. For a differential pressure transmitter, the maximum working pressure is the static line pressure under which the transmitter can safely operate.

If one side of the transmitter is exposed to the full static line pressure due to mis-valving, the transmitter will experience an output shift and must be re-zeroed.

The maximum working pressure of transmitters with assemble-to options is limited by the lowest maximum pressure rating of the individual components.

Table 14: Rosemount 4051S_CD Maximum Working Pressure

Range	Pressure
0	750 psi (51.7 bar)
1	2,000 psi (137.9 bar)
2	3,626 psi (250 bar)
3	3,626 psi (250 bar)

Table 14: Rosemount 4051S_CD Maximum Working Pressure *(continued)*

Range	Pressure
4	3,626 psi (250 bar)
5	3,626 psi (250 bar)
U	2,000 psi (137.9 bar)

Burst pressure limits

Coplanar™ sensor module Rosemount 4051SF

10,000 psig (689.47 bar)

Differential pressure (DP) range 2-4, static pressure range 5

16,400 psi (1130.74 bar)

Transient temperature limits

Ambient

-40 to +185 °F (-40 to +85 °C)

With display(1): –40 to 185 °F (–40 to 85 °C)

With option code P0: –20 to 185 °F (–28 to 85 °C)

With option code BR6: –76 to 185 °F (–60 to 85 °C)

Storage

–50 to 185 °F (–46 to 85 °C)

With display: –40 to 185 °F (–40 to 85 °C)

With option code BR6: –76 to 185 °F (–60 to 85 °C)

Table 15: Process Temperature Limits

At atmospheric pressures and above:

Coplanar sensor module 4051S_C, 4051SF	
with coplanar flange(1)	–40 to 250 °F (–40 to 121 °C)(2)
with traditional flange(3)	–40 to 300 °F (–40 to 149 °C)(2)(4)
with Rosemount 305 integral manifold(1)	–40 to 300 °F (–40 to 149 °C)(2)(4)
with Option Code BR6, coplanar flange	–76 to 250 °F (–60 to 121 °C)(2)
with Option Code BR6, traditional flange	–75 to 300 °F (–60 to 149 °C)(2)

(1) *The maximum ambient temperature is reduced by 1.5 °F for every degree by which the process fluid temperature exceeds 185 °F (85 °C).*
(2) *220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.*
(3) *The maximum ambient temperature is reduced by 1.0 °F for every degree by which the process fluid temperature exceeds 185 °F (85 °C) for all traditional flanges and vertical mount level flanges.*
(4) *–20 °F (–29 °C) is the lower process temperature limit with option code P0.*

(1) LCD display may not be readable, and LCD updates will be slower at temperatures below -13°F (–25°C).

Humidity limits

0–100 percent relative humidity

Turn-on time

When power is applied to the transmitter during startup, performance will be within a maximum turn-on time of 5 seconds.

Volumetric displacement

For Rosemount 4051SC, it is less than 0.005 $in.^3$ (0.08 cm^3).

Damping

Analog output response time to a step change is user-selectable from 0 to 60 seconds for one time constant.

Failure mode alarm

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 Table 16).

High or low alarm signal is software-selectable or hardware-selectable via the optional switch.

Table 16: Alarm Configuration

Configuration	High alarm	Low alarm
Default	22.5 mA	3.725 mA
NAMUR compliant(1)	22.5 mA	3.575 mA
Custom levels(2)	20.2 to 23.0 mA	3.57 to 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.*

NAMUR recommendations

Rosemount 4051S DP Flow Meters meet the following NAMUR recommendations:

NE 21 Electromagnetic compatibility (EMC) for Process and Laboratory Apparatus

NE 43 Standard on the signal level breakdown information of digital transmitters

NE 53 Revision controlled labeling for software and hardware changes

NE 107 Self-Monitoring and Diagnosis of Field Devices

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations, including materials of construction that can be expected to perform well in a wide range of applications.

The product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or

guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration, or materials of construction selected.

Electrical connections

½–14 NPT, G½, and M20 × 1½ conduit. HART® interface connections fixed to terminal block.

Process connections

Coplanar™ sensor module (Rosemount 4051S_C and 4051SF)	
Standard	¼–18 NPT on 2⅛-in. centers
Flange adapters	½–14 NPT and RC½ on 2 in. (50.8 mm), 2⅛ in. (54.0 mm), or 2¼ in. (57.2 mm) centers

Process-wetted parts

Rosemount 4051SFA wetted parts - Rosemount Annubar™ sensor material

- 316 stainless steel (SST)
- Alloy C-276

Note
Cage nipple is made from 304 SST.

Rosemount 4051SFC 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– 300 Series Stainless Steel Nuts– A194 Grade 8M.
Gasket and O-rings	Gaskets are customer supplied. Durlon® 8500 fiber gaskets are recommended. Consult an Emerson representative for use with other gaskets. Available as a spare part. **Note** Emerson recommends replacing gaskets and O-rings when the Rosemount 405 is disassembled.

Rosemount 4051SFP wetted parts - material construction

Orifice plate	316/316L SST Alloy C-276 Alloy 400
Body	A312 Gr 316/316L
Pipe material (if applicable)	A312 Gr 316/316L
Flange	A182 Gr 316/316L Flange pressure limits are per ANSI B16.5

	Flange face finish per ANSI B16.5, 125 to 250 RMS
Body bolts/studs	300 Series Stainless Steel ASTM A193 Gr B8M Class 2 body studs provided for high temperature option code G ASTM A193 Gr B8M Class 2 body studs provided for 1– ½-in (code 015) line size units ordered with high pressure process connection option codes W9, R9, T1, S1, or P2.
Transmitter connection studs	300 Series Stainless Steel
Gaskets/O-rings	Glass filled PTFE Alloy X-750 provided for high temperature option code G Gaskets and O-rings must be replaced each time the Rosemount 3051SFP is disassembled for installation or maintenance.

Coplanar™ sensor module (4051S_C, 4051SMV)

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 flange adapters

- Plated CS
- 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

Wetted O-rings

Glass-filled PTFE

Non-wetted parts

Electronics housing

Low-copper aluminum alloy or CF-8M (Cast 316 stainless steel [SST])

Enclosures meet Type 4X, IP66, and IP68 [66 ft. (20 m) for 168 hours] when properly installed.

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

Paint for aluminum housing

Polyurethane

Cover O-rings

Buna-N

Shipping weights

Table 17: Transmitter Weights

Fully functional transmitter with module, terminal bock, standard covers, and connector board, if applicable.

Complete transmitter weights[1] (without options)	Weight
Rosemount 4051S_C	6.8 lb. (3.08 kg)
4051S_C (SST)	12.3 lb. (5.58 kg)

(1) *Fully functional transmitters with module, housing, terminal block, standard covers, and connector board if applicable. These weights do not include the flange.*

Table 18: Optional Item Weights

Optional item weights	Weight
B1 with U-bolt and bolts	1.71 lb. (0.77 kg)
B2 with U-bolt and bolts	1.282 lb. (0.58 kg)
B3 with U-Bolt and bolts	1.668 lb. (0.76 kg)
B4 (S_C) bracket with U-bolt and bolts	1.186 lb. (0.54 kg)
B4 (S_C with manifold) with U-bolt and bolts	1.544 lb. (0.70 kg)
B4 (S_T) with U-bolt and bolts	1.322 lb. (0.60 kg)
B7 (B1 with SST U-bolt and bolts)	1.716 lb. (0.78 kg)
B8 (B2 with SST U-bolt and bolts)	1.282 lb. (0.58 kg)
B9 (B3 with SST U-bolt and bolts)	1.676 lb. (0.76 kg)
BA with U-bolt and bolts	1.526 lb. (0.69 kg)
BC with U-bolt and bolts	1.562 lb. (0.71 kg)
SST traditional flange	2.700 lb. (1.23 kg)
SST traditional flange with carbon steel mounting bolts	3.052 lb. (1.384 kg)
SST traditional flange with SST mounting bolts	3.056 lb. (1.39 kg)
DP – Alloy C-276 drain/vent (x2)	0.196 lb. (0.09 kg)
DP – SST drain/vent (x2)	0.176 lb. (0.08 kg)
Traditional flange (Alloy C-276)	3.034 lb. (1.38 kg)
SST coplanar flange with carbon steel mounting bolts	1.722 lb. (0.78 kg)
SST coplanar flange with SST mounting bolts	1.726 lb. (0.78 kg)
Traditional flange (Alloy 400)	3.010 lb. (1.37 kg)
Traditional flange (SST with 2 Alloy C-276 D/V)	2.896 lb. (1.31 kg)

Relevant documents

Rosemount 485, 2051CFA, 3051CFA, and 3051SFA Annubar™ Primary Element and Flow Meters

Manual	Rosemount Annubar Flow Meter Series
Quick Start Guide	■ Rosemount 485 Annubar Flanged Assembly ■ Rosemount 485 Annubar Pak-Lok Assembly ■ Rosemount 485 Annubar Flange-Lok Assembly ■ Rosemount 485 Annubar Flanged Flo-Tap Assembly ■ Rosemount 485 Annubar Threaded Flo-Tap Assembly ■ Rosemount 485 Annubar Threaded Assembly (China only)
Type 1 Drawing	Sensor size 1 ■ Flanged ■ Pak-Lok ■ Flange-Lok ■ Flanged Flo-tap and Threaded Flo-tap ■ Rosemount 3051SFA Sensor size 2 ■ Flanged ■ Pak-Lok ■ Flanged-Lok ■ Flanged Flo-tap and Threaded Flo-tap ■ Rosemount 3051SFA Sensor size 3 ■ Flanged ■ Pak-Lok ■ Flange-Lok ■ Flanged Flo-tap and Threaded Flo-tap ■ Rosemount 3051SFA Rosemount 486 Mounting hardware Flanged

Rosemount 405, 2051CFC, 3051CFC, and 3051SFC Compact Primary Element and Flow Meters

Reference manual	Rosemount Compact Flow Meters
Quick start guide	Rosemount 405 Compact Primary Element
Type 1 drawing	Rosemount 405 Compact Flow Meter and Primary Element

Rosemount 1195, 2051CFP, 3051CFP, 3051SFP Integral Orifice Primary Element and Flow Meters

Reference manual	Rosemount Integral Orifice Flow Meter Series

Quick start guide	Rosemount 1195 Integral Orifice Assembly
Type 1 drawing	Rosemount 1195 Flow Meter and Primary Element

Rosemount 1595 Conditioning Orifice Plate

Reference manual	Rosemount 1595 Conditioning Orifice Plate
Quick start guide	Rosemount 1595 Conditioning Orifice Plate
Type 1 drawing	■ ANSI Paddle ■ DIN Paddle ■ RTJ (Integral handle) ■ Universal

Rosemount 585 Annubar Primary Element for Severe Service

Reference manual	Rosemount Annubar Flow Meter Series
Quick start guide	■ Rosemount 585 Annubar Flanged Assembly ■ Rosemount 585 Annubar Flanged Flo-Tap Assembly ■ Rosemount 585 Main Steam Annubar with Opposite Side Support
Type 1 drawing	■ Flanged ■ Flo-tap ■ MSL (Main Stream Line)

Rosemount 1495 Orifice Plate and 1496 Orifice Flange Union

Reference manual	Rosemount 1495 Orifice Plate, 1496 Orifice Flange Union
Quick start guide	Rosemount 1495 Orifice Plate, Rosemount 1496 Orifice Flange Union
Type 1 drawing	■ Rosemount 1496 ■ Rosemount 1495 Universal ■ Rosemount 1495 Paddle ■ Rosemount 1495 Paddle Spiral Finish

Rosemount 9295 Process Flow Meter

Product data sheet	Rosemount 9295 Process Flow Meter
Quick start guide	Rosemount 9295 Process Flow Meter
Type 1 Drawing	Rosemount 9295 Process Flow Meter

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