

Rosemount 3095 MultiVariable™ Mass Flow Transmitter and Flowmeters

THE PROVEN LEADER IN MULTIVARIABLE MASS FLOW MEASUREMENT

- 1.0% Mass Flow rate accuracy over 10:1 Flow Range
- Ten year stability under actual process conditions
- Unprecedented reliability backed by a limited 12-year warranty
- Four variables in one device
- “Real-Time” fully-compensated Mass Flow
- Coplanar™ platform enables DP Flowmeters



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Rosemount 3095M Selection Guide



Rosemount 3095M Mass Flow Transmitter

See ordering information on page 3.

- Measures differential pressure, static pressure, and process temperature to dynamically calculate fully compensated mass flow
- Up to $\pm 1.0\%$ mass flow accuracy over a 10:1 flow turndown
- Ultra for Flow performance provides a 10-year stability and 12-year limited warranty
- Available with HART or FOUNDATION Fieldbus Protocols



Rosemount 3095MFA Annubar Flowmeter

See ordering information on page 21.

- Annubar flowmeters reduce permanent pressure loss by creating less blockage in the pipe
- Ideal for large line size installations when cost, size, and weight of the flowmeter are concerns



Rosemount 3095MFC Compact Orifice Flowmeter

See ordering information on page 41.

- Compact Conditioning flowmeters reduce straight piping requirements to 2D upstream and 2D downstream from a flow disturbance
- Simple installation of Compact flowmeters between any existing raised-face flanges



Rosemount 3095MFP Integral Orifice Flowmeter

See ordering information on page 52.

- 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

Rosemount 3095M MultiVariable Mass Flow Transmitter

Table 1. Rosemount 3095M Multivariable Mass Flow Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
 The Expanded offering is subject to additional delivery lead time.

		— Not available	
		3095MA	3095MV
Model	Product Description		
Standard		Standard	Standard
3095M	MultiVariable Mass Flow Transmitter	★	★
Output			
Standard		Standard	Standard
A	4–20 mA with Digital Signal Based on HART Protocol	★	—
V	FOUNDATION™ fieldbus Protocol	—	★
Differential Pressure Ranges			
Standard		Standard	Standard
1 ⁽¹⁾	0–0,5 to 0–25 inH ₂ O (0–1,25 to 0–62,2 mbar)	★	★
2	0–2,5 to 0–250 inH ₂ O (0–6,22 to 0–623 mbar)	★	★
3	0–10 to 0–1000 inH ₂ O (0–25 mbar to 0–2,49 bar)	★	★
Static Pressure Ranges			
Standard		Standard	Standard
3	0.5-8 to 0.5–800 psia (0,03-0,552 to 0,03-55,2 bar)	★	★
4	0.5-36.26 to 0.5–3626 psia (0,03-2,5 to 0,03–250bar)	★	★
C	0-8 to 0-800 psig (0–0,552 to 0–55,2 bar)	★	★
D	0-36.26 to 0-3626 psig (0-2,5 to 0-250 bar)	★	★
Isolator Material		Fill Fluid	
Standard		Standard	Standard
A ⁽²⁾	316L SST	Silicone	★
B ⁽²⁾	Alloy C-276	Silicone	★
J ⁽²⁾⁽³⁾	316L SST	Inert	★
K ⁽²⁾⁽³⁾	Alloy C-276	Inert	★
Expanded			
F	Gold-Plated 316L SST	Silicone	
D ⁽⁴⁾	Tantalum	Silicone	
L ⁽⁴⁾	Tantalum	Inert	
Flange Style		Material	
A ⁽²⁾	Coplanar	CS	★
B ⁽²⁾	Coplanar	SST	★
C ⁽²⁾	Coplanar	Alloy C-276	★
J	DIN Compliant Traditional Flange, SST 10 mm Adapter/Manifold Bolting	SST, 1/16 — 20 Bolting	★
0	None		★
Drain/Vent Material			
Standard		Standard	Standard
A	SST	★	★
C ⁽²⁾	Alloy C-276	★	★
0	None	★	★
O-ring			
1	Glass-Filled PTFE	★	★
Process Temperature Input			
Standard		Standard	Standard
0	Fixed Process Temperature (No Cable)	★	★
1	RTD Input with 12 ft. (3,66 m) of Shielded Cable	★	★
2	RTD Input with 24 ft. (7,32 m) of Shielded Cable	★	★
7	RTD Input with 75 ft. (22,86 m) of Shielded Cable	★	★

Rosemount 3095 MultiVariable

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3	RTD Input with 12 ft. (3,66 m) of Armored, Shielded Cable		★	★
4	RTD Input with 24 ft. (7,32 m) of Armored, Shielded Cable		★	★
8	RTD Input with 75 ft. (22,86 m) of Armored, Shielded Cable		★	★
A	RTD Input with 12 ft. (3,66 m) of ATEX/IECEx Flameproof Cable		★	★
B	RTD Input with 24 ft. (7,32 m) of ATEX/IECEx Flameproof Cable		★	★
C	RTD Input with 75 ft. (22,86 m) of ATEX/IECEx Flameproof Cable		★	★
Code	Transmitter Housing Material	Conduit		
Standard			Standard	Standard
A	Polyurethane-Covered Aluminum	½–14 NPT	★	★
B	Polyurethane-Covered Aluminum	M20 × 1.5 (CM20)	★	★
J	SST	½–14 NPT	★	★
K	SST	M20 × 1.5 (CM20)	★	★
Expanded				
D	Polyurethane-Covered Aluminum	PG 13.5		
M	SST	PG 13.5		
Terminal Block				
Standard			Standard	Standard
A	Standard		★	★
B	With Integral Transient Protection		★	★
Display				
Standard			Standard	Standard
0	None		★	★
1	LCD Display		★	★
Bracket				
Standard			Standard	Standard
0	None (Required for Option Codes S3 or S5)		★	★
1	Coplanar SST Flange Bracket for 2-in. Pipe or Panel Mount, SST Bolts		★	★
2	Traditional Flange Bracket for 2-in. Pipe Mounting, CS Bolts		★	★
3	Traditional Flange Bracket for Panel Mounting, CS Bolts		★	★
5	Traditional Flange Bracket for 2-in. Pipe Mounting, 300-Series, SST Bolts		★	★
6	Traditional Flange Bracket for Panel Mounting, 300-Series, SST Bolts		★	★
8	SST Traditional Flange Bracket for 2-in. Pipe Mounting, 300-Series, SST Bolts		★	★
9	SST Traditional Flange Flat Bracket for 2-in. Pipe Mounting, 300-Series, SST Bolts		★	★
Bolts				
Standard			Standard	Standard
0	CS bolts		★	★
1	Austenitic 316 SST Bolts		★	★
N	None		★	★
Product Certifications				
Standard			Standard	Standard
0	None		★	★
A	FM Explosion-proof		★	★
J	FM Intrinsically Safe, Division 2		★	★
B	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (Combination of A and J)		★	★
V	FM FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only		—	★
K	CSA Intrinsically Safe, Division 2		★	★
C	CSA Explosion-proof, Dust Ignition-proof, Division 2		★	★
D	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (Combination of C and K)		★	★
W	CSA FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only		—	★
H	ATEX Flameproof		★	★
F	ATEX Intrinsic Safety		★	★
G	ATEX Type n		★	★
P	ATEX Dust		★	★
L	ATEX Flameproof, Intrinsic Safety, Type n, Dust (Combination of F, G, H, and P)		★	★

Product Data Sheet

00813-0100-4716, Rev MB

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Rosemount 3095 MultiVariable

Table 1. Rosemount 3095M Multivariable Mass Flow Transmitter Ordering Information

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T	ATEX FISCO Intrinsic Safety; for FOUNDATION fieldbus protocol only	—	★
6	ATEX FISCO, Intrinsic Safety, Flameproof, Type n, Dust Combination of F, G, H, P and T	—	★
7	IECEX Flameproof	★	★
4	IECEX Intrinsic Safety	★	★
5	IECEX Type n	—	★
8	IECEX Dust	★	★
9	IECEX Flameproof, Dust, Intrinsic Safe	★	★
Y	IECEX FISCO Intrinsic Safety; for FOUNDATION fieldbus protocol only	—	★
E	INMETRO Flameproof	★	★
2	China Intrinsic Safety	★	—
3	China Flameproof	★	★
R	TIIS Flameproof	—	★
Engineered Measurement Solution (EMS)			
Standard		Standard	Standard
B ⁽⁵⁾	Fully Compensated Mass Flow and Measured Variables (DP, P, and T) with HART or FOUNDATION fieldbus.	★	★
V ⁽⁶⁾	Direct Process Variable Measurement (DP, P, and T) Only (No Mass Flow Variable) with FOUNDATION fieldbus.	—	★

Options (Include with selected model number)

Custom Configuration			
Standard		Standard	Standard
C2	Custom Flow Configuration (Requires completed Configuration Data Sheet)	★	★
Process Adapter			
Standard		Standard	Standard
DF ⁽⁷⁾	1/2-14 NPT Process Adapter, Material Type Determined by Selected Flange Material: Plated CS, SST, Cast C-276	★	★
Remote Seal			
Standard		Standard	Standard
S1	One Remote Seal	★	★
S2	Two Remote Seal	★	★
Integral Manifold			
Standard		Standard	Standard
S3	Assemble to Rosemount 405 Compact Orifice	★	★
S5 ⁽⁸⁾	Assemble to Rosemount 305 Integral Manifold	★	★
S6 ⁽⁸⁾	Assemble to Rosemount 304 Manifold or Connection System	★	★
Cleaning			
Expanded			
P2	Cleaning for Special Services		
Material Traceability Certification			
Standard		Standard	Standard
Q8 ⁽⁹⁾	Material Inspection Certificate per EN 10204 3.1B	★	★
Calibration Certificate			
Standard		Standard	Standard
Q4	Inspection Certificate for Calibration Data	★	★
Pressure Testing			
Expanded			
P1	Hydrostatic Testing with Certificate		
Primary Element			
Standard		Standard	Standard
S4 ⁽⁸⁾⁽¹⁰⁾	Assemble to Rosemount 485 or Rosemount 1195	★	★
Surface Finish Certification			
Standard		Standard	Standard
Q16	Surface Finish Certification for sanitary remote seals	★	★
Performance Class			
Standard		Standard	Standard
U3 ⁽¹¹⁾	Ultra for Flow: 0.05% DP Reading Accuracy, Up to 100:1 Rangedown, 10 Yr Stability, 12 Yr Warranty	★	★

Rosemount 3095 MultiVariable

Table 1. Rosemount 3095M Multivariable Mass Flow Transmitter Ordering Information

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PlantWeb Control Functionality			
Standard		Standard	Standard
A01 ⁽¹²⁾	Advanced Control Suite: PID, arith, signal char, integ, etc.; requires FOUNDATION fieldbus	—	★
PlantWeb Diagnostic Functionality			
Standard		Standard	Standard
D01	Cleaning for Special Services	—	★
Typical Model Number 3095M A 2 3 A A A 1 3 A B 0 1 1 0 B			

- (1) Available only with 3 or C sensor modules and "A" 316L SST/silicone, Isolator/Fill Fluid option.
- (2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/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.
- (3) Only available with C or D Gage Sensor Modules.
- (4) Not available with Absolute / Gage Pressure Ranges C or D.
- (5) Requires Rosemount 3095 Engineering Software Assistant to configure mass flow.
- (6) Not available with HART output.
- (7) Not available with assembly to Rosemount 1195 Integral Orifice Option Code S4.
- (8) "Assemble-to" items are specified separately and require a completed model number.
- (9) This option is available for the sensor module housing, Coplanar and Coplanar flange adapters.
- (10) With a primary element installed, the maximum operating pressure will be the lesser of either the transmitter or the primary element.
- (11) Ultra for Flow applicable for HART protocol, DP ranges 2 and 3 with SST isolator material and silicone fill fluid options only.
- (12) Function Blocks include: Arithmetic, Integrator, Analog Output, Signal Characterizer, Control Selector, and Output Selector.

3095M SPECIFICATIONS

3095M Functional Specifications

Service

Gas, liquid, or steam

Differential Sensor

Limits

- Range 1: 0 to 25 inH2O (0 to 62,2 mbar)
- Range 2: 0 to 250 inH2O (0 to 623 mbar)
- Range 3: 0 to 1000 inH2O (0 to 2,49 bar)

Absolute Sensor

Limits

- Range 3: 0.5 to 800 psia (0,03 to 55,2 bar)
- Range 4: 0.5 to 3,626 psia (0,03 to 250 bar)

Gage Sensor

Limits

- Range C: 0 to 800 psig (0 to 55,2 bar)
- Range D: 0 to 3,626 psig (0 to 250 bar)

Temperature Sensor

Process Temperature Range

- -300 to 1500 °F (-184 to 816 °C)

Fixed Temperature Range

- -459 to 3500 °F (-273 to 1927 °C)

Overpressure Limit

0.5 psia (0,03 bar) to two times the static pressure sensor range up to a maximum of 3,626 psia (250 bar) for differential pressure ranges 2-3 and 2000 psia (137,9 bar) for differential pressure range 1.

Static Pressure Limit

Operates within specifications between static line pressures of 0.5 psia (0,03 bar) and the URL of the absolute pressure sensor.

Temperature Limits

Process (at transmitter isolator flange for atmospheric pressures and above)

- Silicone fill: -40 to 250 °F (-40 to 121 °C)
- Inert fill: 0 to 185 °F (-18 to 85 °C) (Process temperature above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio.)

Ambient:

- -40 to 185 °F (-40 to 85 °C)
- With LCD Display⁽¹⁾: -40 to 175 °F (-40 to 80 °C)

Storage:

- -50 to 230 °F (-46 to 110 °C)
- With LCD Display: -40 to 185 °F (-40 to 85 °C)

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

Damping

Analog output response to step input change can be user-selectable from 0 to 29 seconds for one time constant.

4–20 mA (output option code A)

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, user-selectable for DP, AP, GP, PT, mass flow, or totalized flow. Digital HART protocol superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol.

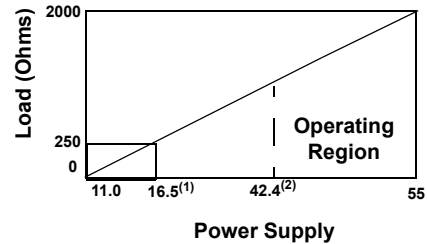
Power Supply

External power supply required. Transmitter operates on terminal voltage of 11–55 Vdc.

Load Limitations

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

$$\text{Maximum Loop Resistance} = \frac{\text{Power Supply} - 11.0}{0.022}$$



(1) HART protocol communication requires a loop resistance value between 250-1100 ohms, inclusive.

(2) For CSA approval, power supply must not exceed 42.4 Vdc.

FOUNDATION fieldbus (output option code V)

Power Supply

External power supply required; transmitters operate on 9.0 to 30.0 Vdc for Intrinsically Safe applications, 9.0 to 17.5 Vdc for FISCO applications, and 9.0 to 32.0 Vdc for all other applications.

Current Draw

17.5 mA for all configurations (including LCD Display option)

Humidity Limits

0–100% relative humidity

Turn-on Time

Digital and analog measured variables will be within specifications 7–10 seconds after power is applied to transmitter.

Digital and analog flow output will be within specifications 10–14 seconds after power is applied to transmitter.

Rosemount 3095 MultiVariable

Failure Mode Alarm

Output Code A

If self-diagnostics detect a non-recoverable transmitter failure, the analog signal will be driven either below 3.75 mA or above 21.75 mA to alert the user. High or low alarm signal is user-selectable by internal jumper pins.

Output Code V

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable(s).

Configuration

475 Field Communicator

- Performs traditional transmitter maintenance functions

3095 Multivariable Engineering Assistant (EA) software package

- Contains built-in physical property database
- Enables mass flow configuration, maintenance, and diagnostic functions via HART modem (output option code A)
- Enables mass flow configuration via PCM-CIA Interface for FOUNDATION fieldbus (output option code V)

Primary Elements

Supports over 25 different primary elements including:

- *Annubar* Averaging Pitot Tube
- Rosemount 1195 Integral Orifice Plate
- Rosemount 405 Compact and Conditioning Orifice
- ISO/ASME Orifice Flange Taps
- Calibrated and Custom Primary Elements
- ISO/ASME Corner Taps
- AGA Flange Taps
- ISO/ASME Venturi
- ISO/ASME Venturi Nozzle
- Area Averaging Meter
- V-Cone

Physical Properties Database

- Maintained in Engineering Assistant Software Configurator
- Physical properties for over 110 fluids
- Natural gas per AGA
- Steam and water per ASME
- Other database fluids per American Institute of Chemical Engineers (AIChE)
- Optional custom entry

FOUNDATION fieldbus Function Blocks

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.

5 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.

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.

Steam Flow Calculations

Steam densities calculated per ASME steam tables.

Saturated steam configurable using static pressure based density calculations.

Natural Gas Flow Calculations

Flow calculations per 1992 AGA (American Gas Association) Report No 3 or ISO-5167 (2003).

Compressibility Calculations per AGA Report No 8 or ISO-12213.

3095M Performance Specifications

(Zero-based spans, reference conditions, silicone oil fill, 316 SST isolating diaphragms, 4–20 mA analog output.)

Specification Conformance

The Rosemount 3095 maintains a specification conformance of measured variables to at least 3σ .

Mass Flow

Fully compensated for pressure, temperature, density, viscosity gas expansion, discharge coefficient, and thermal correction variances over operating range.

$$Q_m = N C_d E Y_1 d^2 \sqrt{DP(\rho)}$$

Ultra for Flow: Mass Flow Reference Accuracy (option U3)⁽¹⁾

- $\pm 1.0\%$ of Mass Flow Rate over a 10:1 flow range (100:1 DP range for liquids and gases)

Mass Flow Reference Accuracy

- $\pm 1.0\%$ of Mass Flow Rate over 8:1 flow range (64:1 DP range for liquids and gases)

Totalized Mass Flow

- $\pm 1.0\%$ of Total Mass Flow

(Uncalibrated differential producer (Orifice) installed per ASME MFC3M or ISO 5167-1. Uncertainties for discharge coefficient, producer bore, tube diameter, and gas expansion factor defined in ASME MFC3M or ISO 5167-1. Density uncertainty of 0.1%. Differential pressure calibrated at up to 1/10th full scale for optimum flow accuracy/rangeability.)

Differential Pressure

Range 1

- 0–0.5 to 0–25 inH₂O (0–1,25 to 0–62,3 mbar) (50:1 rangeability is allowed)

Range 2

- 0–2.5 to 0–250 inH₂O (0–6,22 to 0–623 mbar) (100:1 rangeability is allowed)

Range 3

- 0–10 to 0–1000 inH₂O (0–0,249 to 0–2,49 bar) (100:1 rangeability is allowed)

Reference Accuracy (including Linearity, Hysteresis, Repeatability)⁽²⁾

Range 2-3 Ultra for Flow (Option U3)⁽¹⁾

- $\pm 0.05\%$ of DP reading up to 3:1 DP turndown from URL
- For DP turndowns up to 100:1 from URL,

$$\text{Accuracy} = \pm \left[0.05 + 0.0145 \left(\frac{URL}{DP\text{Reading}} \right) \right] \% \text{ of DP Reading}$$

Accuracy = Range 2-3

- $\pm 0.075\%$ of span for spans from 1:1 to 10:1 of URL
- For spans less than 10:1 of URL,

$$\text{Accuracy} = \pm \left[0.025 + 0.005 \left(\frac{URL}{Span} \right) \right] \% \text{ of Span}$$

Range 1

- $\pm 0.10\%$ of span for spans from 1:1 to 15:1 of URL
- For spans less than 15:1 of URL,

$$\text{Accuracy} = \pm \left[0.025 + 0.005 \left(\frac{URL}{Span} \right) \right] \% \text{ of Span}$$

Ambient Temperature Effect per 50 °F (28 °C)

Range 2-3 Ultra for Flow (Option U3)⁽¹⁾

- $\pm 0.130\%$ of DP reading up to 3:1 DP turndown from URL
- $\pm [0.05 + 0.0345 (URL/DP \text{ Reading})]\%$ of DP reading up to 100:1 DP turndown from URL

Range 2-3

- $\pm (0.025\% \text{ of URL} + 0.125\% \text{ of span})$ for spans from 1:1 to 30:1
- $\pm (0.035\% \text{ of URL} - 0.175\% \text{ of span})$ for spans from 30:1 to 100:1

Range 1

- $\pm (0.20\% \text{ of URL} + 0.25\% \text{ of span})$ for spans from 1:1 to 30:1
- $\pm (0.24\% \text{ of URL} + 0.15\% \text{ of span})$ for spans from 30:1 to 50:1

Static Pressure Effects

Range 2-3

- Zero error = $\pm 0.05\%$ of URL per 1,000 psi (68,95 bar)
- Span error = $\pm 0.20\%$ of DP Reading per 1,000 psi (68,95 bar)

Range 1

- Zero error = $\pm 0.05\%$ of URL per 800 psi (55,1 bar)
- Span error = $\pm 0.40\%$ of DP Reading per 800 psi (55,1 bar)

Stability

Range 2-3 Ultra for Flow (Option U3)⁽¹⁾

- $\pm 0.25\%$ of URL for 10 years for ± 50 °F (28 °C) temperature changes, up to 1000 psi (68,95 bar) line pressure

Ranges 2-3

- $\pm 0.125\%$ URL for 5 years for ± 50 °F (28 °C) ambient temperature changes, and up to 1000 psi (68,95 bar) line pressure.

Range 1

- $\pm 0.2\%$ of URL for 1 year

Absolute/Gage Pressure

Absolute (100:1 rangeability allowed)

Range 3

0.5–8 to 0.5–800 psia (0,03-0,552 to 0,03-55,2 bar)

Range 4

0.5–36.26 to 0.5–3,626 psia (0,03-2,5 to 0,03-250 bar)

Gage (100:1 rangeability allowed)

Range C

0–8 to 0–800 psig (0-0,552 to 0-55,2 bar)

Range D

- 0–36.26 to 0–3,626 psig (0-2,5 to 0-250 bar)

Reference Accuracy

(including Linearity, Hysteresis, Repeatability)

$\pm 0.075\%$ of span for spans from 1:1 to 10:1 of URL

For spans less than 10:1 of URL,

$$\text{Accuracy} = \pm \left[0.03 + 0.0075 \left(\frac{URL}{Span} \right) \right] \% \text{ of Span}$$

(1) Ultra for Flow (option U3) applicable for HART protocol, DP ranges 2 and 3 with SST isolator material and silicone fill fluid options only.

(2) For FOUNDATION fieldbus transmitters, use calibrated range in place of span.

Rosemount 3095 MultiVariable

Ambient Temperature Effect per 50 °F (28 °C)

±(0.050% of URL + 0.125% of span) spans from 1:1 to 30:1
±(0.060% of URL – 0.175% of span) spans from 30:1 to 100:1

Stability

±0.125% URL for 5 years for ±50 °F (28 °C) ambient temperature changes, and up to 1000 psi (68,95 bar) line pressure.

Process Temperature

Specification for process temperature is for the transmitter portion only. Sensor errors caused by the RTD are not included. The transmitter is compatible with any PT100 RTD conforming to IEC 751 Class B, which has a nominal resistance of 100 ohms at 0 °C and $\alpha = 0.00385$. Examples of compatible RTDs include the Rosemount Series 68 and 78 RTD Temperature Sensors.

RTD Range

–300 to 1500 °F (–184 to 816 °C)

Accuracy (including Linearity, Hysteresis, Repeatability)

For 12 and 24 ft. Cables

- ±1.0 °F (0.56 °C) for process temperatures from –300 to 1200 °F (–184 to 649 °C)
- For process temperatures above 1200 °F (649 °C), add ±1.0 °F (0.56 °C) per 100 °F (38 °C)

For 75 ft. cables:

- ±2.0 °F (1.12 °C) for process temperatures from –300 to 1200 °F (–184 to 649 °C)
- For process temperatures above 1200 °F (649 °C), add ±1.0 °F (0.56 °C) per 100 °F (38 °C)

Stability

±1.0 °F (0.56 °C) for 12 months

Vibration Effect

Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz 0.21mm displacement peak amplitude / 60-2000 Hz 3g).

For Housing Style codes 1J, 1K, 1L, 2J, and 2M:

Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-60 Hz 0.15mm displacement peak amplitude / 60-500 Hz 2g).

3095M Physical Specifications

Security

Transmitter security jumper mounted on electronics board, when enabled prevents changes to transmitter configuration.

User Engineering Assistant provides two levels of optional password security.

Electrical Connections

½–14 NPT, M20 × 1.5 (CM20), PG-13.5. HART interface connections fixed to terminal block for output code A.

RTD Process Temperature Input

100-ohm platinum RTD per IEC-751 Class B

Process Connections

Transmitter: ¼–18 NPT on 2¹/₈-in. centers ½–14 NPT on 2-, 2¹/₈-, or 2¹/₄-in. centers with optional flange adapters
RTD: RTD dependent.

Process Wetted Parts

Isolating Diaphragms

- 316L SST or Alloy C-276. CF-8M (last version of 316 SST, material per ASTM-A743)

Drain/Vent Valves

- 316 SST or Alloy C-276

Flanges

- Plated carbon steel, 316 SST, or Alloy C-276

Wetted O-rings

- Glass-Filled PTFE

Non-Wetted Parts

Electronics Housing

- Low copper aluminum. NEMA 4X, CSA, Enclosure Type 4X, IP 65, IP 66, IP 68

Bolts

- Plated carbon steel per ASTM A449, Grade 5 or austenitic 316 SST

Fill Fluid

- Silicone or halocarbon inert oil (Inert oil only available for gage sensor modules.)

Paint (Aluminum Housing only)

- Polyurethane

O-rings

- Buna-N

Weight

Component	Weight in lb (kg)
Rosemount 3095 Transmitter	6.0 (2.7)
SST Mounting Bracket	1.0 (0.4)
12 ft (3.66 m) RTD Shielded Cable	0.5 (0.2)
12 ft (3.66 m) RTD Armored Cable	1.1 (0.5)
12 ft (3.66 m) RTD ATEX/IECEx Cable	2.1 (0.9)
24 ft (7.32 m) RTD Shielded Cable	1.0 (0.4)
24 ft (7.32 m) RTD Armored Cable	2.2 (1.0)
24 ft (7.32 m) RTD ATEX/IECEx Cable	3.0 (1.4)
75 ft (22.86 m) RTD Shielded Cable	1.9 (0.9)
75 ft (22.86 m) RTD Armored Cable	7.2 (3.2)
75 ft (22.86 m) RTD ATEX/IECEx Cable	7.1 (3.2)

Rosemount 3095M Product Certifications

ROSEMOUNT 3095M WITH HART

Approved Manufacturing Locations

Rosemount Inc. — Chanhassen, Minnesota USA
 Emerson Process Management GmbH & Co. — Wessling, Germany
 Emerson Process Management Asia Pacific Private Limited — Singapore
 Beijing Rosemount Far East Instrument Co., Limited — Beijing, China

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095F_2/3,4/D and 3095M_2/3,4/D Flow Transmitters — QS Certificate of Assessment - EC No. PED-H-100 Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller — Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold — Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (2004/108/EC)

3095 Flow Transmitters
 — EN61326-1:2006, EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Rosemount 3095M HART Hazardous Locations Certifications

North American Certifications

FM Approvals

A Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure Type 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.

J Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1010.

Canadian Standards Association (CSA)


C Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. CSA enclosure Type 4X suitable for indoor and outdoor hazardous locations. Provides nonincendive RTD connection for Class I, Division 2, Groups A, B, C, and D. Factory Sealed. Install in accordance with Rosemount Drawing 03095-1024. Approved for Class I, Division 2, Groups A, B, C, and D.

K Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. when installed in accordance with Rosemount drawing 03095-1021. Temperature Code T3C.

For input parameters and installation see control drawing 03095-1021.

European Certifications

F ATEX Intrinsic Safety

Certificate Number: BAS98ATEX1359X  II 1 G

EEx ia IIC T5 ($T_{amb} = -45\text{ °C to }40\text{ °C}$)

EEx ia IIC T4 ($T_{amb} = -45\text{ °C to }70\text{ °C}$)

CE 1180

TABLE 2. Connection Parameters
 (Power/Signal Terminals)

$U_i = 30\text{ V}$
$I_i = 200\text{ mA}$
$P_i = 1.0\text{ W}$
$C_i = 0.012\text{ }\mu\text{F}$
$L_i = 0$

TABLE 3. Temperature Sensor Connection Parameters

$U_o = 30\text{ V}$
$I_o = 19\text{ mA}$
$P_o = 140\text{ mW}$
$C_i = 0.002\text{ }\mu\text{F}$
$L_i = 0$

Rosemount 3095 MultiVariable

TABLE 4. Connection Parameters for Temperature Sensor Terminals

$C_o = 0.066 \mu\text{F}$	Gas Group IIC
$C_o = 0.560 \mu\text{F}$	Gas Group IIB
$C_o = 1.82 \mu\text{F}$	Gas Group IIA
$L_o = 96 \text{ mH}$	Gas Group IIC
$L_o = 365 \text{ mH}$	Gas Group IIB
$L_o = 696 \text{ mH}$	Gas Group IIA
$L_o/R_o = 247 \mu\text{H}/\text{ohm}$	Gas Group IIC
$L_o/R_o = 633 \mu\text{H}/\text{ohm}$	Gas Group IIB
$L_o/R_o = 633 \mu\text{H}/\text{ohm}$	Gas Group IIA

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN 60079-11: 2007, Clause 6.3.12. This condition must be accounted for during installation.

G ATEX Type n

Certificate Number: BAS98ATEX3360X  II 3 G

EEx nL IIC T5 ($T_{amb} = -45 \text{ }^\circ\text{C}$ to $40 \text{ }^\circ\text{C}$)

EEx nL IIC T4 ($T_{amb} = -45 \text{ }^\circ\text{C}$ to $70 \text{ }^\circ\text{C}$)

$U_i = 55 \text{ V}$


CE

The apparatus is designed for connection to a remote temperature sensor such as a resistance temperature detection (RTD).

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN50 021, Clause 9.1 (1995). This condition must be accounted for during installation.

H ATEX Flameproof

Certificate Number: KEMA02ATEX2320X  II 1/2 G

EEx d IIC T5 ($-50 \text{ }^\circ\text{C} \leq T_{amb} \leq 80 \text{ }^\circ\text{C}$)


T6 ($-50 \text{ }^\circ\text{C} \leq T_{amb} \leq 65 \text{ }^\circ\text{C}$)

CE 1180

Special Conditions for Safe Use (x):

The device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

P ATEX Dust

Certificate Number: KEMA02ATEX2321  II 1 D T 90°C

$V = 55 \text{ Vdc MAX}$

$I = 23 \text{ mA MAX}$

IP66

CE 1180

IECEX Certifications (HART)

4 IECEX Intrinsic Safety

Certificate Number: IECEX BAS06.0070X

Ex ia IIC T4 ($-45 \text{ }^\circ\text{C} \leq T_a \leq 70 \text{ }^\circ\text{C}$)

Ex ia IIC T5 ($-45 \text{ }^\circ\text{C} \leq T_a \leq 40 \text{ }^\circ\text{C}$)

Table 5. Input Parameters

HART I.S.
$U_i = 30 \text{ Vdc}$
$I_i = 200 \text{ mAdc}$
$P_i = 1.0 \text{ W}$
$C_i = 12 \text{ nF}$
$L_i = 0$

Table 6. RTD Terminals Entity Parameters

$U_o = 30 \text{ Vdc}$
$I_o = 19 \text{ mAdc}$
$P_o = 140 \text{ mW}$

The capacitance and either the Inductance or the Inductance to Resistance Ratio (L/R) of the load connected to the 4-pin connector must not exceed the following values:

Group	Capacitance (μF)	Inductance (mH)	or L/R Ratio $\mu\text{H}/\text{Ohm}$
IIC	0.066	96	247
IIB	0.56	365	633
IIA	1.82	696	633

NOTE

1. The external circuit contains no combined lumped inductance and capacitance greater than 1% of the above values.

Or 2. The inductance and capacitance are distributed as in a cable.

Or 3. The external circuit contains only lumped inductance or only lumped capacitance in combination with a cable.

In all other situations, e.g. combined lumped inductance and capacitance, up to 50% of each of L and C values is allowed.

Conditions of Certification (X):

When fitted with the transient option, the apparatus is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.4.12 of IEC 60079-11: 1999. This must be taken into account during installation.

5 IECEX Type n

Certificate Number: IECEX BAS06.0071X

Ex nA nL IIC T4 ($-45 \text{ }^\circ\text{C} \leq T_a \leq 70 \text{ }^\circ\text{C}$)

Ex nA nL IIC T5 ($-45 \text{ }^\circ\text{C} \leq T_a \leq 40 \text{ }^\circ\text{C}$)

$U_i = 55 \text{ Vdc max}$

Conditions of Certification (X):

When fitted with the transient option, the apparatus is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.8.1 of IEC 60079-15: 2005. This must be taken into account during installation.

Product Data Sheet

00813-0100-4716, Rev MB

January 2011

Rosemount 3095 MultiVariable

- 7** IECEx Flameproof
 Certificate Number: IECEx KEM 06.0018
 Zone 0/1 Ex d IIC T6 (-20 °C ≤ T_a ≤ 65 °C)
 Zone 0/1 Ex d IIC T5 (-20 °C ≤ T_a ≤ 80 °C)
 V_{max} = 55 Vdc
 I_{max} = 23 mAdc
- 8** IECEx Dust
 Certificate Number: IECEx KEM 06.0018
 Ex tD A22 T90°C
 IP66

INMETRO Certifications

- E** INMETRO Flameproof
 BR-Ex d IIC T6/T5

China (NEPSI) Certifications

- 2** China Intrinsic Safety
 Ex ia IIC T4

Special conditions for safe use (x)

- The ambient temperature range is (-20 ~ +60) °C.
- The relation between temperature class and maximum temperature of process medium is as following.

Maximum Temperature of Process Medium (°C)	Temperature Class
121	T4
95	T5
80	T6

- The earth connection facility in the enclosure should be connected reliably.
- During installation, use, and maintenance of transmitter, observe the warning, "Don't open the cover when the circuit is alive."
- During installation, there should be no mixture harm to flameproof housing.
- Cable entry, certified by NEPSI with type of protection Ex d IIC in accordance with GB3836.2-2000, should be applied when installation in hazardous location. Five full threads should be in engagement when the cable entry is assembled onto the transmitter.
- The diameter of cable should observe the instruction manual of cable entry. The compressing nut should be fastened. The aging of seal ring should be changed in time.
- Maintenance should be done in non-hazardous location.
- End users is not permitted to change any components insides.
- During installation, use, and maintenance of transmitter, observe following standards.
 GB3836.13-1997 "Electrical apparatus for explosive gas atmospheres Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres"
 GB3836.15-2000 "Electrical apparatus for explosive gas atmospheres Part 15: Electrical installations in hazardous area (other than mines)"
 GB50257-1996 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".

- 3** China Flameproof
 Ex d II B+H₂T4~T6

Special conditions for safe use (x)

- 3095 Series transmitter with temperature sensor have **not** been certified.
- The temperature of process medium should be less than 121 °C.
- The ambient temperature range is (-40~+60) °C.
- Safety parameters
 - Input parameters
 - Transmitter with output code "V"
 U_i = 30 V I_i = 300 mA P_i = 1.3 W C_i ≈ 0
 L_i ≈ 0
 - Other transmitters
 U_i = 40 V I_i = 165 mA P_i = 1.0 W C_i = 0.012 μ F
 L_i = 20 μ H
 - RTD terminals
 U_o = 30 V I_o = 12 mA P_o = 100 mW C_o = 66 nF L_o = 100 mH
- The cable entry of transmitter should be protected to ensure the degree of protection of the enclosure IP 20 (GB4208-1993) at least.
- The terminals for connection to power supply of transmitter should be connected to associated apparatus certified by NEPSI in accordance with GB3836.1-2000 and GB3836.4-2000 to establish intrinsic safety system, it has to fulfill the following requirements:
 U_o ≤ U_i I_o ≤ I_i P_o ≤ P_i C_o ≥ C_c + C_i L_o ≥ L_c + L_i
 Note: C_c, L_c the distributed capacitance and inductance of the cables
 U_o, I_o, P_o maximum output parameters of associated apparatus
 C_o, L_o, maximum external parameters of associated apparatus
- The terminals for connection to sensor of transmitter should be connected to intrinsic safety sensor certified by NEPSI in accordance with GB3836.1-2000 and GB3836.4-2000 to establish intrinsic safety system, it has to fulfill the following requirements:
 U_i ≥ U_o I_i ≥ I_o P_i ≥ P_o C_i ≤ C_o - C_c L_i ≤ L_o + L_c
 Note: C_c, L_c the distributed capacitance and inductance of the cables
 U_i, I_i, P_i maximum input parameters of intrinsic safety sensor
 C_i, L_i, maximum internal parameters of intrinsic safety sensor
- The cables between the transmitter, associated apparatus and sensor are 2-core shielded cables (the cables must have insulated shield). The cable core section area should be more than 0.5 mm². The shielded has to be grounded in a non-hazardous area and isolated from the housing. The wiring has to be unaffected by electromagnetic disturbance.
- Associated apparatus should be installed in a safe location, and during installation, operation, and maintenance, the regulations of the instruction manual have to be strictly observed.
- End users are not permitted to change any components insides.

Rosemount 3095 MultiVariable

11. During installation, use, and maintenance transmitter, observe the following standards
 GB3836.13-1997 "Electrical apparatus for explosive gas atmospheres Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres"
 GB3836.15-2000 "Electrical apparatus for explosive gas atmospheres Part 15: Electrical installations in hazardous area (other than mines)"
 GB3836.16-2006 "Electrical apparatus for explosive gas atmospheres Part 16: Inspection and maintenance of electrical installation (other than mines):
 GB50257-1996 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering"

- R** TIIS Flameproof
 Consult factory for availability

Combinations of Certifications

Stainless steel certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

- B** A and J combination
D C and K combination
L F, G, H, and P combination
9 4, 5, 7, and 8 combination

ROSEMOUNT 3095M WITH *FIELD*BUS

Approved Manufacturing Locations

Rosemount Inc. — Chanhassen, Minnesota USA

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095F_2/3,4/D and 3095M_2/3,4/D Flow Transmitters
 — QS Certificate of Assessment - EC No. PED-H-100
 Module H Conformity Assessment
 All other 3095_ Transmitters/Level Controller
 — Sound Engineering Practice
 Transmitter Attachments: Process Flange - Manifold
 — Sound Engineering Practice
 Primary Elements, Flowmeter
 — See appropriate Primary Element QIG

Electro Magnetic Compatibility (EMC) (2004/108/EC)

3095 Flow Transmitters

— EN 50081-1: 1992; EN 50082-2:1995; EN61326-1:2006, EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Rosemount 3095M Fieldbus Hazardous Locations Certifications

North American Certifications

FM Approvals

- A** Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
J Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

- V** FISCO for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

Canadian Standards Association (CSA)

- C** Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Factory Sealed. CSA enclosure Type 4X for indoor and outdoor hazardous locations. Suitable for Class I, Division 2, Groups A, B, C, and D. Install in accordance with Rosemount Drawing 03095-1024.
K Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. When installed in accordance with Rosemount Drawing 03095-1021. Temperature Code T3C.
W FISCO Field Device. Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. When installed in accordance with Rosemount Drawing 03095-1021. Temperature Code T3C.

European Certifications

- F/T** ATEX Intrinsic Safety Certificate Number:
 Baseefa 05ATEX0022X
 Ⓜ II 1 G
 EEx ia IIC T5 ($T_{amb} = -45\text{ °C to }40\text{ °C}$)
 EEx ia IIC T4 ($T_{amb} = -45\text{ °C to }70\text{ °C}$)
 CE 1180

TABLE 7. Connection Parameters (Power/Signal Terminals)

Fieldbus (F Option)	FISCO (T Option)
$U_i = 30\text{ V}$	$U_i = 17.5\text{ V}$
$I_i = 300\text{ mA}$	$I_i = 380\text{ mA}$
$P_i = 1.3\text{ W}$	$P_i = 5.32\text{ W}$
$C_i = 3.3\text{ nF}$	$C_i \leq 5\text{ nF}$
$L_i = 0$	$L_i = 10\text{ }\mu\text{H}$

TABLE 8. Temperature Sensor Connection Parameters

$U_o = 30\text{ V}$
$I_o = 19\text{ mA}$
$P_o = 140\text{ mW}$

TABLE 9. Connection Parameters for Temperature Sensor Terminals

$C_o = 0.066\text{ }\mu\text{F}$	Gas Group IIC
$C_o = 0.560\text{ }\mu\text{F}$	Gas Group IIB
$C_o = 1.82\text{ }\mu\text{F}$	Gas Group IIA
$L_o = 96\text{ mH}$	Gas Group IIC
$L_o = 365\text{ mH}$	Gas Group IIB
$L_o = 696\text{ mH}$	Gas Group IIA
$L_o/R_o = 247\text{ }\mu\text{H}/\text{ohm}$	Gas Group IIC
$L_o/R_o = 633\text{ }\mu\text{H}/\text{ohm}$	Gas Group IIB
$L_o/R_o = 633\text{ }\mu\text{H}/\text{ohm}$	Gas Group IIA

Special Conditions for Safe Use

Versions of the apparatus fitted with the transient protected terminals are not capable of withstanding the 500 V insulation test required by Clause 6.4.12 of EN 50020:2002. This must be taken into account when installing the apparatus.

G ATEX Type N

Certificate Number: Baseefa05ATEX0023X

Ⓔ II 3 G

EEx nA nL IIC T5 ($T_{amb} = -45\text{ }^\circ\text{C}$ to $40\text{ }^\circ\text{C}$)

EEx nA nL IIC T4 ($T_{amb} = -45\text{ }^\circ\text{C}$ to $70\text{ }^\circ\text{C}$)

$U_i = 55\text{ V}$

RTD Terminals - The apparatus is designed for connection to a remote temperature sensor such as a resistance temperature detection (RTD).

Special Conditions for Safe Use

Versions of the apparatus fitted with the transient protected terminals are not capable of withstanding the 500 V insulation test required by Clause 8.1 of EN 60079-15:2003. This must be taken into account when installing the apparatus.

H ATEX Flameproof

Certificate Number: KEMA02ATEX2320X

Ⓔ II 1/2 G

EEx d IIC T5 ($-50\text{ }^\circ\text{C} \leq T_{amb} \leq 80\text{ }^\circ\text{C}$)

T6 ($-50\text{ }^\circ\text{C} \leq T_{amb} \leq 65\text{ }^\circ\text{C}$)

$V_{max} = 55\text{ Vdc MAX}$

$I_{max} = 23\text{ mA MAX}$

IP66

CE 1180

Special Conditions for Safe Use (x):

The device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

P ATEX Dust

Certificate Number: KEMA02ATEX2321

Ⓔ II 1 D T90 °C ($-50\text{ }^\circ\text{C} \leq T_{amb} \leq 80\text{ }^\circ\text{C}$)

$V_{max} = 55\text{ Vdc}$

$I_{max} = 23\text{ mA}$

IP66

CE 1180

IECEx Certifications (Fieldbus)

4/Y IECEx Intrinsic Safety

Certificate Number: IECEx BAS05.0023X

Ex ia IIC T4 ($-45\text{ }^\circ\text{C} \leq T_a \leq 70\text{ }^\circ\text{C}$)

Ex ia IIC T5 ($-45\text{ }^\circ\text{C} \leq T_a \leq 40\text{ }^\circ\text{C}$)

Table 10. Input Parameters

Fieldbus I.S.	FISCO
$U_i = 30\text{ Vdc}$	$U_i = 17.5\text{ Vdc}$
$I_i = 300\text{ mAdc}$	$I_i = 380\text{ mAdc}$
$P_i = 1.3\text{ W}$	$P_i = 5.32\text{ W}$
$C_i = 3.3\text{ nF}$	$C_i \leq 5\text{ nF}$
$L_i = 0$	$L_i \leq 10\text{ mH}$

Table 11. RTD Terminals Entity Parameters

$U_o = 30\text{ Vdc}$
$I_o = 19\text{ mAdc}$
$P_o = 140\text{ mW}$

The capacitance and either the Inductance or the Inductance to Resistance Ratio (L/R) of the load connected to the 4-pin connector must not exceed the following values:

Group	Capacitance (μF)	Inductance (mH)	or L/R Ratio $\mu\text{H}/\text{Ohm}$
IIC	0.066	96	247
IIB	0.56	365	633
IIA	1.82	696	633

Conditions of Certification (X):

When fitted with the transient option, the apparatus is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.4.12 of IEC 60079-11: 1999. This must be taken into account during installation.

5 IECEx Type n

Certificate Number: IECEx BAS05.0024X

Ex nC IIC T4 ($-45\text{ }^\circ\text{C} \leq T_a \leq 70\text{ }^\circ\text{C}$)

Ex nC IIC T5 ($-45\text{ }^\circ\text{C} \leq T_a \leq 40\text{ }^\circ\text{C}$)

$U_i = 55\text{ Vdc max}$

Conditions of Certification (X):

When fitted with the transient option, the apparatus is not capable of withstanding the 500 V electrical strength test as defined in Clause 8 of IEC 60079-15: 1987. This must be taken into account during installation.

Rosemount 3095 MultiVariable

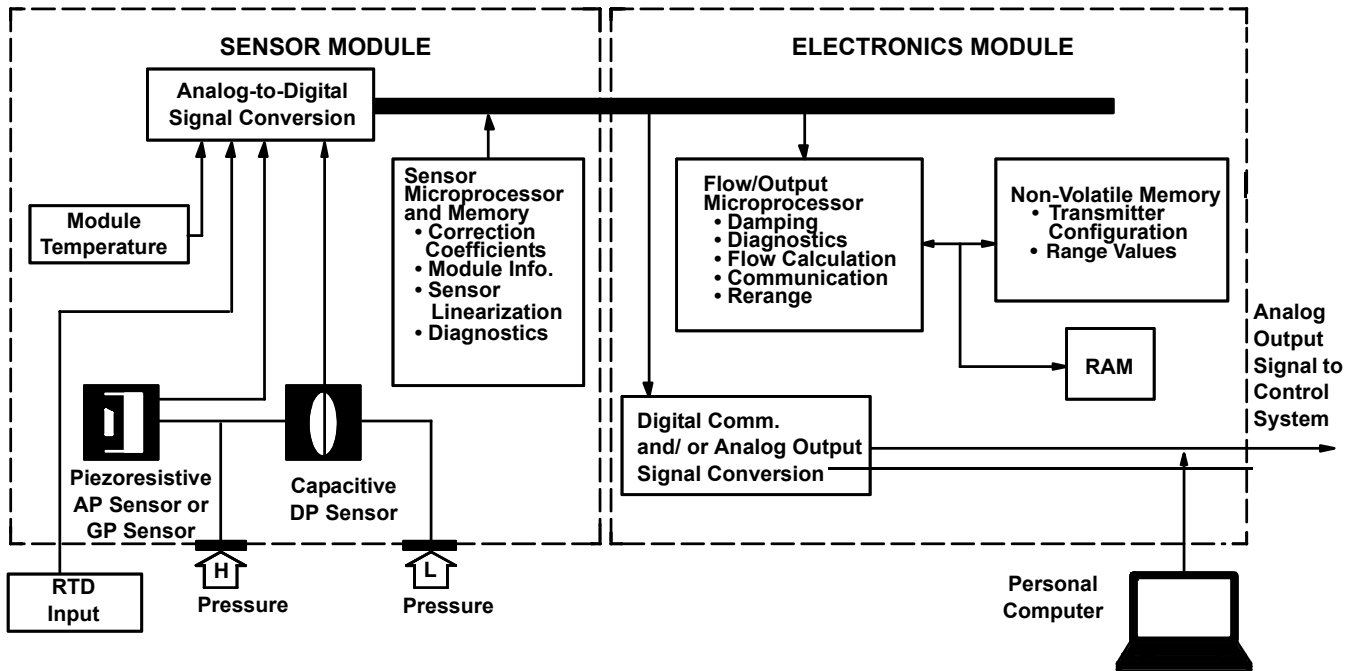
- 7 IECEx Flameproof
 Certificate Number: IECEx KEM 06.0018
 Zone 0/1 Ex d IIC T6 (-20 °C ≤ T_a ≤ 65 °C)
 Zone 0/1 Ex d IIC T5 (-20 °C ≤ T_a ≤ 80 °C)
 V_{max} = 55 Vdc
 I_{max} = 23 mAdc
- 8 IECEx Dust
 Certificate Number: IECEx KEM 06.0018
 Ex tD A22 T90°C
 IP66

Combinations of Certifications

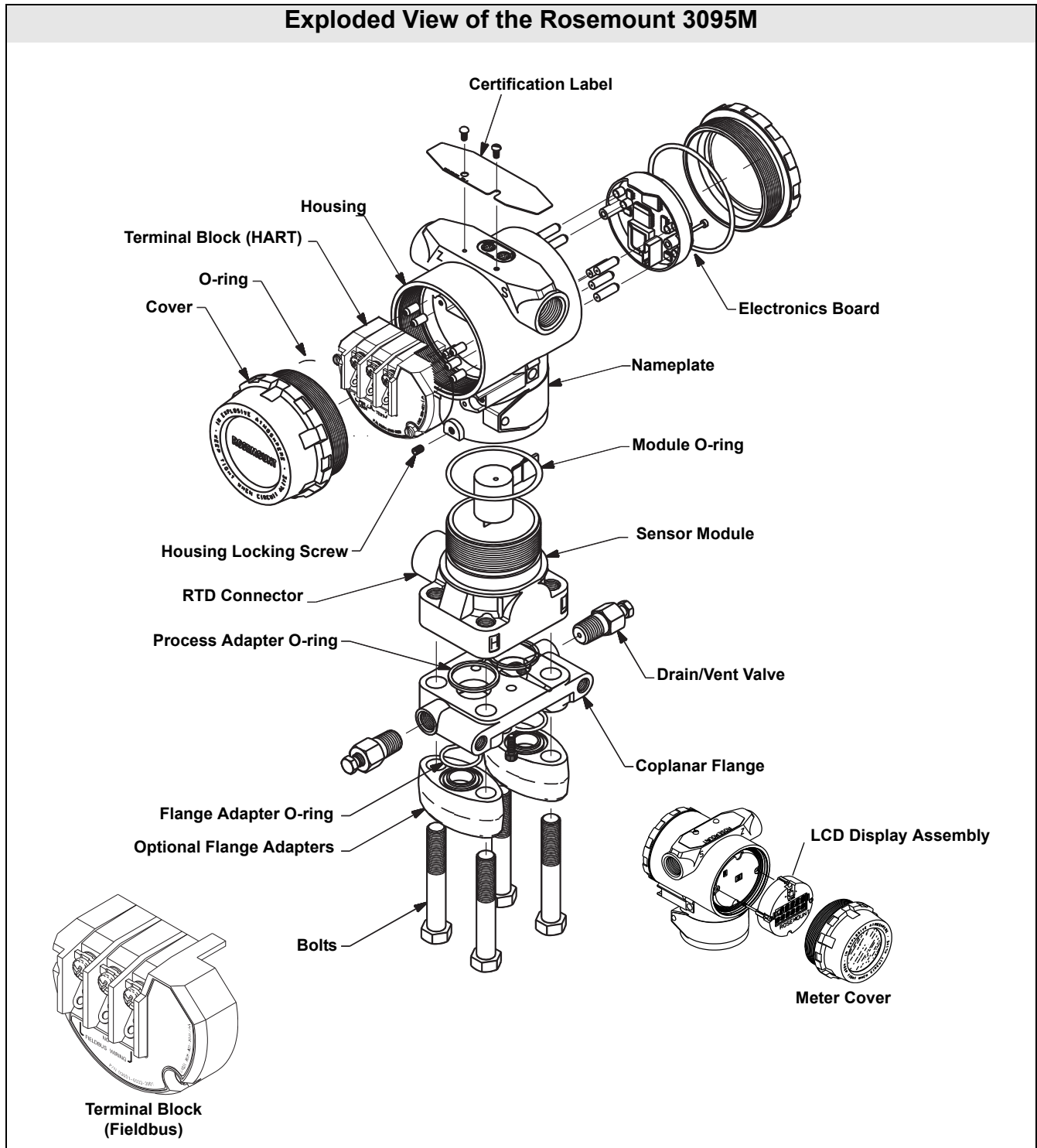
SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

- B A and J combination
- D C and K combination
- L F, G, H, and P combination
- 6 T, G, H, and P combination
- 9 4, 5, 7, and 8 combination

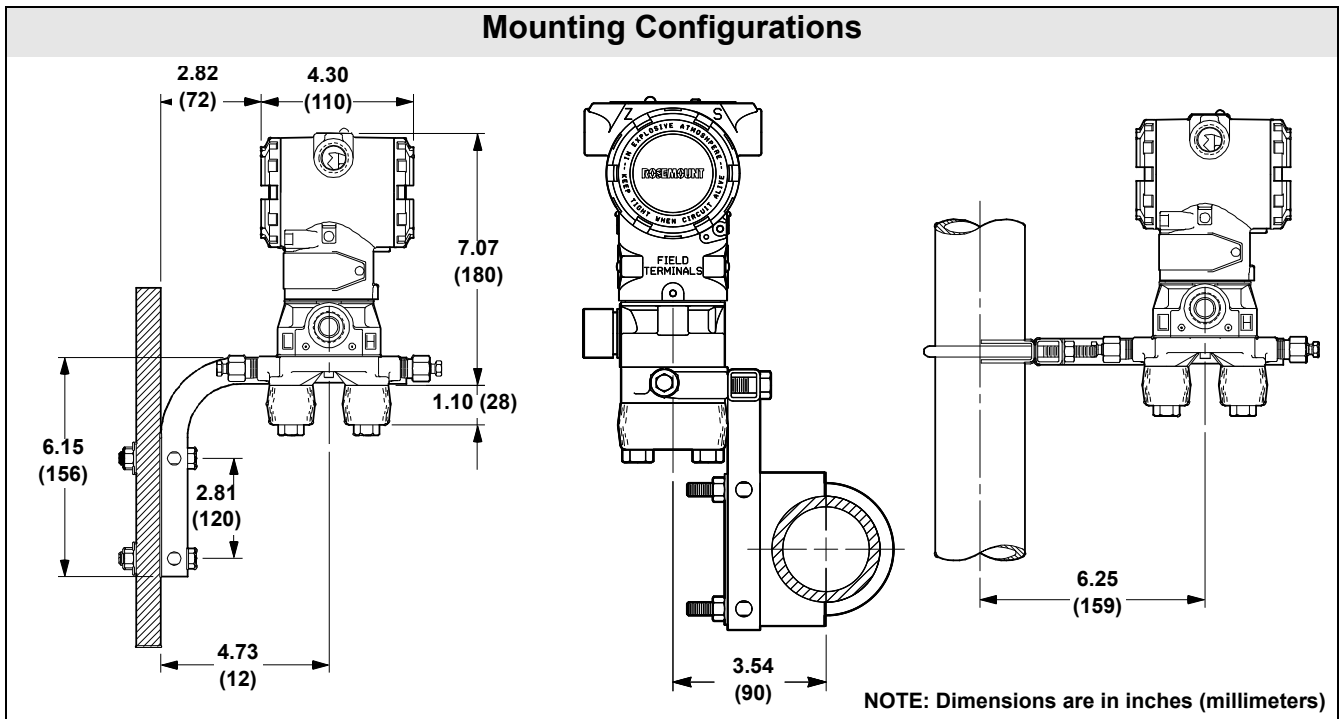
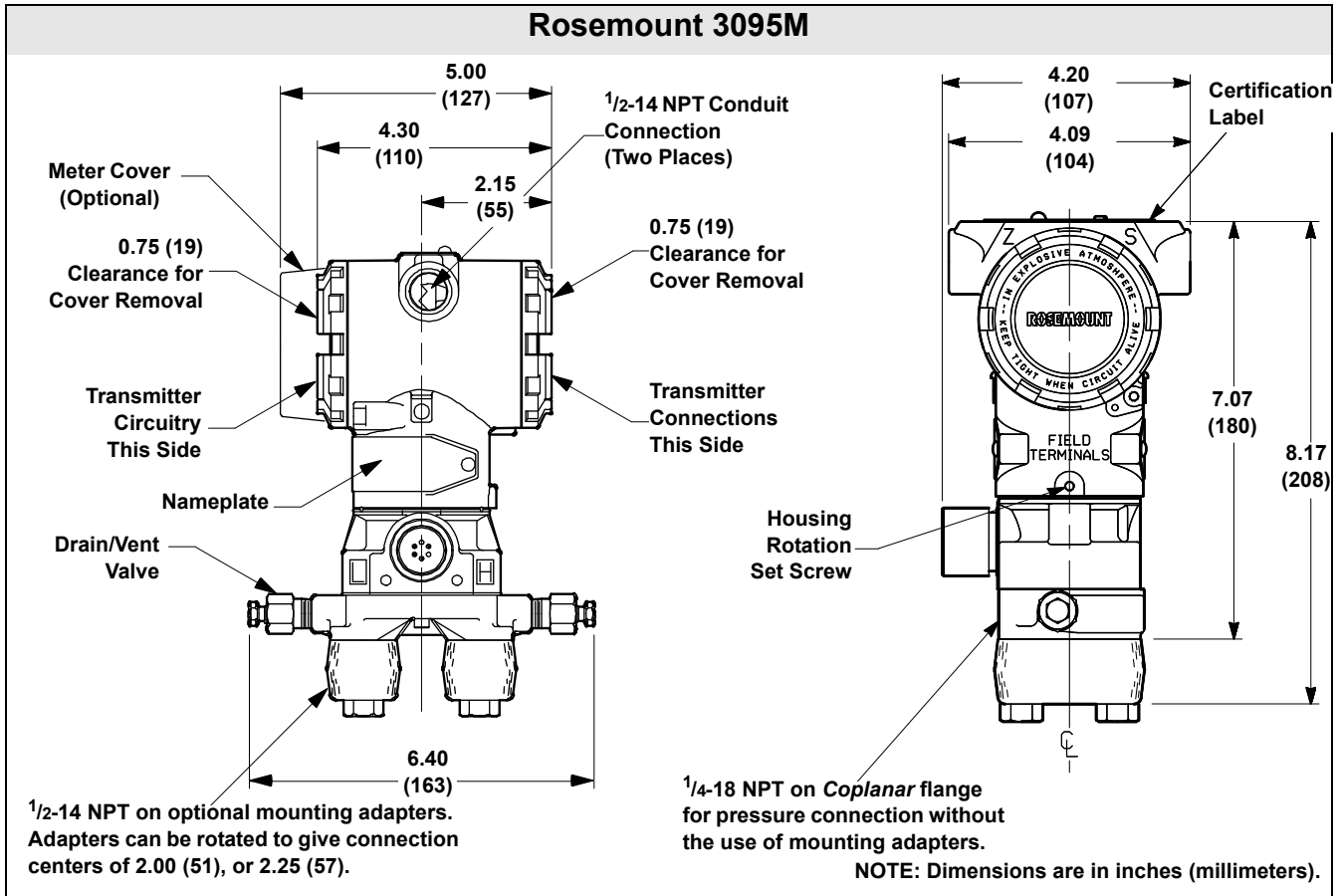
Figure 1. 3095 MultiVariable Sensor Module/ Electronics Module



Rosemount 3095M Dimensional Drawings



Rosemount 3095 MultiVariable



OPTIONS

Standard Configuration

Unless otherwise specified, transmitter is shipped as follows:

Engineering units:	
Differential	inH ₂ O (Range 2)
Absolute/gage	psi (all ranges)
Output:	Specified model code option
Flange type:	Specified model code option
Flange material:	Specified model code option
O-ring material:	Specified model code option
Drain/vent:	Specified model code option
Flow Configuration Parameters:	Factory default
Software tag:	(Blank)

In addition, transmitter is shipped as follows:

- The three process variables are digitally trimmed to the specified upper and lower range values.
- For Mass Flow and Measured Variables (EMS Code B), process variable output order is set to Flow, DP, AP/GP, PT.
- Flow is configured to measure air via ASME Orifice: Flange Tap, with a primary element minimum diameter of 0.5 in. (SST material), meter tube diameter of 2 in. (carbon steel material), flow range configured from 0–8,262 SCFH, 10–100 psia operating pressure range, and 50–100 °F operating temperature range.

Custom Configuration (Option Code C2)

If Option Code C2 is ordered, the custom flow configuration parameters are specified in addition to the standard configuration parameters.

Fixed Process Temperature (Option Code 0)

If Process Temperature Input (option code 0) is ordered, the fixed process temperature is set to 68 °F unless specified during order entry (HART protocol only).

Tagging

Three customer tagging options are available:

- Standard SST tag is wired to the transmitter. Tag character height is 0.125 in. (3.18 mm), 85 characters maximum.
- Tag may be permanently stamped on transmitter nameplate upon request. Tag character height is 0.0625 in. (1.59 mm), 65 characters maximum.
- Tag may be stored in transmitter memory.
- Software tag (8 characters maximum HART protocol; 32 characters maximum FOUNDATION fieldbus protocol) is left blank unless specified.

Optional Rosemount 305 Integral Manifolds

Rosemount 3095 Transmitter and 305AC (305BC) Integral Manifold are fully assembled, calibrated, and seal tested by the factory. Refer to PDS 00813-0100-4733 for additional information.

Temperature Sensors and Assemblies

Rosemount offers many types of temperature sensors and assemblies.

ACCESSORIES

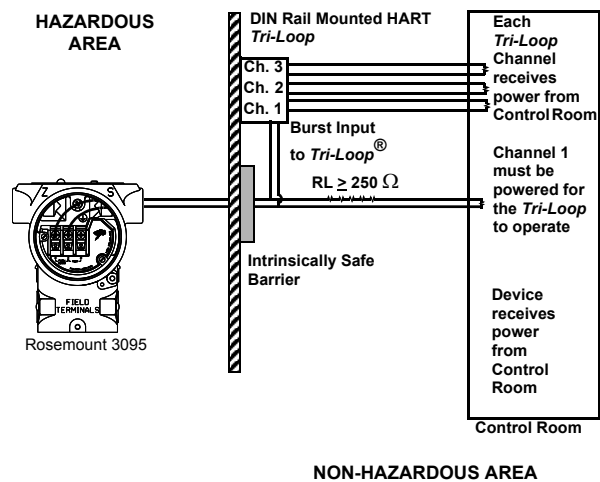
Rosemount 333 HART *Tri-Loop*™ HART-to-Analog Signal Converter

The Rosemount 333 HART *Tri-Loop* can be installed with the 3095 without disrupting existing device wiring. The 333 HART *Tri-Loop* provides up to three additional analog outputs for process monitoring or control without additional pipe penetrations.

The HART *Tri-Loop* accepts the 3095 digital signal and converts it to three independent isolated 4–20 mA analog signals. Any of the 3095 process variables (DP, AP, GP, PT, or flow) can be provided via the 333 HART *Tri-Loop*.

Rosemount 333 HART *Tri-Loop*

Model	Product Description
333	HART <i>Tri-Loop</i> (standard configuration)
Code	Alarm Option
U	High Alarm
D	Low Alarm
Code	Options
C2	Custom Configuration. Requires a completed Configuration Data Sheet (00806-0100-4754)
Typical Model Number: 333 U	



Rosemount 3095 MultiVariable

Accessories

Item Description	Part Number
Serial Port HART Modem and Cables Only	03095-5105-0001
USB Port HART Modem and Cables Only ⁽¹⁾	03095-5105-0002
FOUNDATION fieldbus PCM-CIA Interface Card and Cables Only	03095-5108-0001

(1) Supported by Snap-On EA with AMS Device Manager version 6.2 or higher.

Rosemount 3095 Engineering Assistant (EA)

Software Packages

The Rosemount 3095 Engineering Assistant software supports mass flow configuration for both HART and FOUNDATION fieldbus protocols. The package is available with or without protocol-specific modem and connecting cables. All configurations are packaged separately.

For best performance of the EA Software, the following computer hardware and software is recommended:

- Pentium, 800MHz personal computer or above
- 512 MB RAM
- 350 MB of available hard disk space
- Mouse or other pointing device
- Color computer display
- Microsoft® Windows™ XP

3095 Engineering Assistant Software Package

Code	Product Description
EA	Engineering Assistant Software Package
Code	Software Version
2	EA Rev. 5 (Compatible with 3095, 3051S FOUNDATION fieldbus, and 333)
Code	Language
E	English
Code	Modem and Connecting Cables
0	None
H	Serial Port HART Modem and Cables
B	USB Port HART Modem and Cables
C	FOUNDATION fieldbus PCM-CIA Interface Card and Cables
Code	License
N1	Single PC License
N2	Site License
Typical Model Number: EA 2 E O N1	

Rosemount 3095MFA Annubar Flowmeter

Table 12. Rosemount 3095MFA Annubar Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
 The Expanded offering is subject to additional delivery lead time.

Model	DP Flow Flowmeter Type	
3095MFA	Annubar Flowmeter	
Fluid Type		
Standard		Standard
L	Liquid	★
G	Gas	★
S	Steam	★
Line Size		
Standard		Standard
020	2-in. (50 mm)	★
025	2 1/2-in. (63,5 mm)	★
030	3-in. (80 mm)	★
035	3 1/2-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)	★
Expanded		
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 I.D. Range		
Standard		Standard
C	Range C from the Pipe I.D. table	★
D	Range D from the Pipe I.D. table	★
Expanded		
A	Range A from the Pipe I.D. table	
B	Range B from the Pipe I.D. table	
E	Range E from the Pipe I.D. table	
Z	Non-standard Pipe I.D. Range or Above 12-in. Line Size	
Pipe Material / Assembly Material		
Standard		Standard
C	Carbon steel (A105)	★
S	316 SST	★
0 ⁽¹⁾	No Mounting (Customer Supplied)	★
Expanded		
G	Chrome-Moly Grade F-11	
N	Chrome-Moly Grade F-22	
J	Chrome-Moly Grade F-91	

Rosemount 3095 MultiVariable

Table 12. Rosemount 3095MFA Annubar Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Piping Orientation			
Standard			Standard
H	Horizontal Piping		★
D	Vertical Piping with Downwards Flow		★
U	Vertical Piping with Upwards Flow		★
Annubar Type			
Standard			Standard
P	Pak-Lok		★
F	Flanged with opposite side support		★
Expanded			
L	Flange-Lok		
G	Gear-Drive Flo-Tap		
M	Manual Flo-Tap		
Sensor Material			
Standard			Standard
S	316 SST		★
Expanded			
H	Alloy C-276		
Sensor Size			
Standard			Standard
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 12-in. (300 mm)		★
Mounting Type			
Standard			Standard
T1	Compression/Threaded Connection		★
A1	150# RF ANSI		★
A3	300# RF ANSI		★
A6	600# RF ANSI		★
D1	DN PN16 Flange		★
D3	DN PN40 Flange		★
D6	DN PN100 Flange		★
Expanded			
A9	900# RF ANSI		
AF	1500# RF ANSI		
AT	2500# RF ANSI		
R1	150# RTJ Flange		
R3	300# RTJ Flange		
R6	600# RTJ Flange		
R9	900# RTJ Flange		
RF	1500# RTJ Flange		
RT	2500# RTJ Flange		
Opposite Side Support or Packing Gland			
Standard			Standard
0	No opposite side support or packing gland (Required for Pak-Lok and Flange-Lok models)		★
Opposite Side Support – Required for Flanged Models			
C	NPT Threaded Opposite Support Assembly – Extended Tip		★
D	Welded Opposite Support Assembly – Extended Tip		★
Expanded			
Packing Gland – Required for Flo-Tap Models			
	<i>Packing Gland Material</i>	<i>Rod Material</i>	<i>Packing Material</i>
J	SST Packing Gland / Cage Nipple	Carbon Steel	PTFE
K	SST Packing Gland / Cage Nipple	SST	PTFE
L	SST Packing Gland / Cage Nipple	Carbon Steel	Graphite
N	SST Packing Gland / Cage Nipple	SST	Graphite
R	Alloy C-276 Packing Gland / Cage Nipple	SST	Graphite

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Rosemount 3095 MultiVariable

Table 12. Rosemount 3095MFA Annubar Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Isolation Valve for Flo-Tap Models			
Standard			Standard
0 ⁽¹⁾	Not Applicable or Customer Supplied		★
Expanded			
1	Gate Valve, Carbon Steel		
2	Gate Valve, SST		
5	Ball Valve, Carbon Steel		
6	Ball Valve, SST		
Temperature Measurement			
Standard			Standard
T	Integral RTD – not available with Flanged model greater than class 600		★
0	No Temperature Sensor		★
Expanded			
R	Remote Thermowell and RTD		
Transmitter Connection Platform			
Standard			Standard
3	Direct-mount, Integral 3-valve manifold– not available with Flanged model greater than class 600		★
5	Direct -mount, 5-valve manifold– not available with Flanged model greater than class 600		★
7	Remote-mount NPT Connections (1/2-in. FNPT)		★
8	Remote-mount SW Connections (1/2-in.)		★
Expanded			
6	Direct-mount, high temperature 5-valve manifold– not available with Flanged model greater than class 600		
Differential Pressure Ranges			
Standard			Standard
1	0 to 25 in H ₂ O (0 to 62,3 mbar) – not available with Sensor Material code H		★
2	0 to 250 in H ₂ O (0 to 623 mbar)		★
3	0 to 1000 in H ₂ O (0 to 2,5 bar)		★
Static Pressure Ranges			
Standard			Standard
B	0–8 to 0–800 psia (0–55,16 to 0–5515,8 kPa)		★
C	0–8 to 0–800 psig (0–55,16 to 0–5515,8 kPa)		★
D	0–36.2 to 0–3626 psia (0–250 to 0–25000 kPa)		★
E	0–36.2 to 0–3626 psig (0–250 to 0–25000 kPa)		★
Output Protocol			
Standard			Standard
A	4–20 mA with digital signal based on HART protocol		★
V	FOUNDATION fieldbus		★
Code	Transmitter Housing Style	Conduit Entry Size	
Standard			Standard
1A	Polyurethane-covered aluminum	1/2-14 NPT	★
1B	Polyurethane-covered aluminum	M20 x 1.5	★
1J	SST	1/2-14 NPT	★
1K	SST	M20 x 1.5	★
Expanded			
1C	Polyurethane-covered aluminum	G 1/2	
1L	SST	G 1/2	

Options (Include with selected model number)

Performance Class			
Standard			Standard
U3 ⁽²⁾	Ultra for Flow: up to 0.95% mass flow rate accuracy, up to 10:1 turndown, 10-year stability, limited 12-year warranty		★
PlantWeb Control Functionality			
Standard			Standard
A01 ⁽³⁾	Advanced Control Function Block Suite		★

Rosemount 3095 MultiVariable

Table 12. Rosemount 3095MFA Annubar Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Pressure Testing		
Expanded		
P1 ⁽⁴⁾	Hydrostatic Testing	
PX ⁽⁴⁾	Extended Hydrostatic Testing	
Special Cleaning		
Expanded		
P2	Cleaning for Special Processes	
PA	Cleaning per ASTM G93 level D (section 11.4)	
Material Testing		
Expanded		
V1	Dye Penetrant Exam	
Material Examination		
Expanded		
V2	Radiographic Examination	
Flow Calibration		
Expanded		
W1	Flow Calibration (Average K)	
WZ	Special Calibration	
Special Inspection		
Standard		Standard
QC1	Visual & Dimensional Inspection with Certificate	★
QC7	Inspection & Performance Certificate	★
Surface Finish		
Standard		Standard
RL	Surface finish for Low Pipe Reynolds Number in Gas and Steam	★
RH	Surface finish for High Pipe Reynolds Number in Liquid	★
Material Traceability Certification		
Standard		Standard
Q8 ⁽⁵⁾	Material Certificate per EN 10204:2004 3.1	★
Code Conformance		
Expanded		
J2 ⁽⁶⁾	ANSI/ASME B31.1	
J3 ⁽⁶⁾	ANSI/ASME B31.3	
Material Conformance		
Expanded		
J5 ⁽⁷⁾	NACE MR-0175 / ISO 15156	
Country Certification		
Expanded		
J1	Canadian Registration	
Installed in Flanged Pipe Spool Section⁽⁸⁾		
Expanded		
H3	150# Flanged Connection with Rosemount Standard Length and Schedule	
H4	300# Flanged Connection with Rosemount Standard Length and Schedule	
H5	600# Flanged Connection with Rosemount Standard Length and Schedule	
Instrument Connections for Remote Mount Option		
Standard		Standard
G2	Needle Valves, SST	★
G6	OS&Y Gate Valve, SST	★
Expanded		
G1	Needle Valves, Carbon Steel	
G3	Needle Valves, Alloy C-276	
G5	OS&Y Gate Valve, Carbon Steel	
G7	OS&Y Gate Valve, Alloy C-276	
Special Shipment		
Standard		Standard
Y1	Mounting Hardware Shipped Separately	★

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Rosemount 3095 MultiVariable

Table 12. Rosemount 3095MFA Annubar Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Special Dimensions		
Expanded		
VM	Variable Mounting	
VT	Variable Tip	
VS	Variable length Spool Section	
V9	Special Dimension	
Transmitter Calibration Certification		
Standard		Standard
Q4	Calibration Data Certificate for Transmitter	★
Product Certifications		
Standard		Standard
E5	FM Approvals Explosion-proof	★
I5	FM Approvals Intrinsic Safety, Non-Incendive	★
K5	FM Approvals Explosion-proof, Intrinsic Safety, Non-Incendive (combination of E5 and I5)	★
E6	CSA Explosion-proof	★
I6	CSA Intrinsically Safe, Division 2	★
K6	CSA Explosion-proof, Intrinsically Safe, Division 2	★
I1	ATEX Intrinsic Safety	★
E1	ATEX Flameproof	★
N1	ATEX Type n	★
K1	ATEX Flameproof, Intrinsic Safety, Type n	★
ND	ATEX Dust	★
E4	TIIS Flameproof Certification	★
I7	IECEx Intrinsic Safety	★
Alternate Transmitter Material of Construction		
Standard		Standard
L1 ⁽⁹⁾	Inert Sensor Fill Fluid	★
Display		
Standard		Standard
M5	Digital Display	★
Terminal Blocks		
Standard		Standard
T1	Transient Protection	★
Manifold for Remote Mount Option		
Standard		Standard
F2	3-Valve Manifold, SST	★
F6	5-Valve Manifold, SST	★
Expanded		
F1	3-Valve Manifold, Carbon Steel	
F3	3-Valve Manifold, Alloy C-276	
F5	5-Valve Manifold, Carbon Steel	
F7	5-Valve Manifold, Alloy C-276	
Typical Model Number: 3095MFA L 060 D C H P S 2 T1 0 0 0 3 2 C A 1A		

- (1) Provide the "A" dimension for Flanged, Flange-Lok, and Threaded Flo-Tap models. Provide the "B" dimension for Flange Flo-Tap models.
- (2) Ultra for Flow applicable for HART protocol, DP ranges 2 and 3 with SST isolator material and silicone fill fluid options only.
- (3) Function Blocks include: Arithmetic, Integrator, Analog Output, Signal Characterizer, Control Selector, and Output Selector.
- (4) Applies to assembled flowmeter only, mounting not tested.
- (5) Isolation and Instrument valves not included in Traceability Certification.
- (6) Not available with Transmitter Connection Platform 6.
- (7) Materials of Construction comply with metallurgical requirements within NACE MR0175/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.
- (8) Available for line sizes from 2 to 8-in. (50 to 200 mm).
- (9) Not available with DP range 1.

Rosemount 3095 MultiVariable

Rosemount 3095MFA Specifications

3095MFA Performance Specifications

System Reference Accuracy

±1.40 (8:1 turndown) of mass flow rate accuracy

With Ultra for Flow:

±0.95% (10:1 turndown) of mass flow rate accuracy

Repeatability

±0.1%

Line Sizes

- Sensor Size 1: 2-in. to 8-in. (50 to 200 mm)
- Sensor Size 2: 6-in. to 96-in. (150 to 2400 mm)
- Sensor Size 3: 12-in. to 96-in. (300 to 2400 mm)

NOTE

Some mounting types are not available in larger line sizes.

TABLE 13. Reynolds Number and Probe Width

Sensor Size	Minimum Rod Reynolds Number (R_d)	Probe Width (d) (inches)
1	6500	0.590-in. (14.99 mm)
2	12500	1.060-in. (26.92 mm)
3	25000	1.935-in. (49.15 mm)

Where

d = Probe width (feet)

v = Velocity of fluid (ft/sec)

ρ = Density of fluid (lbm/ft³)

μ = Viscosity of the fluid (lbm/ft-sec)

$$R_d = \frac{d \times v \times \rho}{\mu}$$

Output

Two-wire 4–20 mA, user-selectable for DP, AP, GP, PT, mass flow, or totalized flow. Digital HART protocol superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol

Performance Statement Assumptions

- Measured pipe I.D.
- Electronics are trimmed for optimum flow accuracy.
- Performance dependent on application parameters.

Sizing

Contact an Emerson Process Management sales representative for assistance. A "Configuration Data Sheet" is required prior to order for application verification.

Optional Performance Class Specification

Ultra for Flow (Code U3): up to 0.95% mass flow rate accuracy, 10:1 turndown, 10-year stability, limited 12-year warranty

Annubar Sensor Surface Finish

The front surface of the Annubar primary is textured for high Reynolds number applications (typically gas and steam). The surface texture creates a more turbulent boundary layer on the front surface of the sensor. The increased turbulence produces a more predictable and repeatable separation of flow at the edge of the sensor. The appropriate surface finish will be determined for each application by the Emerson Process Management sizing program, Instrument Toolkit software.

3095MFA Functional Specifications

Service

- Liquid
- Gas
- Steam

Power Supply

4–20 mA option

- External power supply required. Standard transmitter (4–20 mA) operates on 11 to 55 Vdc with no load

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)
- 400 °F (205 °C) when top mounted in steam service

Remote Mount Transmitter

- 1250 °F (677 °C) – Alloy C-276 Sensor Material (For superheated steam applications above 1000 °F (538 °C), it is recommended that the Rosemount 585 with Alloy 800H sensor material is used.)
- 850 °F (454 °C) – SST Sensor Material

Transmitter Temperature Limits

Ambient

- –40 to 185 °F (–40 to 85 °C)
- With Integral Display: –4 to 175 °F (–20 to 80 °C)

Storage

- –50 to 230 °F (–46 to 110 °C)
- With Integral Display: –40 to 185 °F (–40 to 85 °C)

Pressure Limits

Direct Mount Transmitter

- Up to 600# ANSI (1440 psig at 100 °F (99 bar at 38 °C))
- Integral temperature measurement is not available with Flanged mounting type greater than class 600

Remote Mount Transmitter⁽¹⁾

- Up to 2500# ANSI (6000 psig at 100 °F (416 bar at 38 °C))

⁽¹⁾ Maximum allowable pressure will be limited by the transmitter pressure limit of 3626 psi.

Overpressure Limits

0 to 2 times the absolute pressure range with a maximum of 3626 psia (250 bar).

Static Pressure Limits

- Operates within specification between static pressures of 0.5 psia (0.03 bar-A) and the URL of the static pressure sensor.

Product Data Sheet

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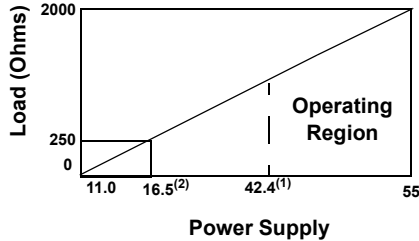
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Rosemount 3095 MultiVariable

Load Limitations

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

$$\text{Maximum Loop Resistance} = \frac{\text{Power Supply} - 11.0}{0.022}$$



(1) For CSA approval, power supply must not exceed 42.4 Vdc.

(2) HART protocol communication requires a loop resistance value between 250-1100 ohms, inclusive.

FOUNDATION fieldbus (output option code V)

Power Supply

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

Current Draw

17.5 mA for all configurations (including LCD display option).

Humidity Limits

- 0–100% relative humidity

Turn-On Time

Digital and analog measured variables will be within specification 7 – 10 seconds after power is applied to the transmitter.

Digital and analog flow output will be within specifications 10 – 14 seconds after power is applied to the transmitter.

Damping

Analog output response to a step input change is user-selectable from 0 to 29 seconds for one time constant. This software damping is in addition to sensor module response time.

Failure Mode Alarm

Output Code A

If self-diagnostics detect a non-recoverable transmitter failure, the analog signal will be driven either below 3.75 mA or above 21.75 mA to alert the user. High or low alarm signal is user-selectable by internal jumper pins.

Output Code V

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable(s).

Configuration

Field Hand-held Communicator

- Performs traditional transmitter maintenance functions

3095 Multivariable Engineering Assistant (EA) software package

- Contains built-in physical property database
- Enables mass flow configuration, maintenance, and diagnostic functions via HART modem (output option code A)
- Enables mass flow configuration via PCMCIA Interface for FOUNDATION fieldbus (output option code V)

Physical Properties Database

- Maintained in Engineering Assistant Software Configurator
- Physical properties for over 110 fluids
- Natural gas per AGA
- Steam and water per ASME
- Other database fluids per American Institute of Chemical Engineers (AIChE)
- Optional custom entry

FOUNDATION fieldbus Function Blocks

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.

5 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.

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.

Rosemount 3095 MultiVariable

3095MFA Physical Specifications

Temperature Measurement

Integral RTD

- 100 Ohm platinum RTD
- 4-wire RTD ($\alpha = 0.00385$)

Remote RTD

- 100 Ohm platinum RTD, spring loaded with $1/2$ -in. NPT nipple and union (078 series with Rosemount 644 housing)

Thermowell

- $1/2$ -in. x $1/2$ -in NPT, 316 SST with $1/2$ -in. Weld coupling material to match process pipe.

Housing Connections

$1/2$ -14 NPT, G $1/2$, and M20 x 1.5 (CM20) conduit. HART interface connections fixed to terminal block for output code A

Annubar Sensor Material

- 316 SST
- Alloy C-276

Annubar Type

See "Dimensional Drawings" on page 35

Pak-Lok Model (option P)

- Provided with a compression sealing mechanism rated up to 600# ANSI (1440 psig at 100 °F (99 bar at 38 °C))
- Graphite Packing (–100 to 850 °F (–73 to 454 °C)).
- Not available for steam above 600 °F (315 °C)

Flanged with Opposite Side Support Model (option F)

- Provided with opposite side support, which is the same material as the pipe and requires a second pipe penetration
- Sensor flange is the same material as the Annubar sensor and the mounting flange is the same material as the pipe material.
- Flanged mounting hardware: nuts, studs, and gaskets (DIN units supplied without nuts, studs, and gaskets)
- SST: (–300 to 850 °F (–184 to 454 °C)).
- Alloy C-276: (–300 to 1250 °F (–184 to 677 °C)).
- Top mounting is recommended for steam temperatures above 600 °F (315 °C).

Flange-Lok Model (option L)

- Flange-Lok assembly is supplied in 316 SST material.
- Flange-Lok mounting hardware: nuts, studs, and gaskets (DIN units supplied without nuts, studs, and gaskets)
- –100 to 850 °F (–73 to 454 °C).
- Not available for steam above 600 °F (315 °C)

Flo-Tap Models (options G and M)

- Opposite side support is not available
- Threaded connection is not available with Sensor Size 3
- Gear Drive is not available with Sensor Size 1
- Packing gland required
- Packing Gland Material Temperature Limits
 - PTFE: –40 to 400 °F (–40 to 204 °C)
 - Graphite: –100 to 850 °F (–73 to 454 °C)
- Isolation valve included
 - The isolation valve will carry the same pressure rating as the sensor flange and mounting flange specified in the mounting type
 - Ball valves have a 300# limitation
 - For threaded flo-tap models, the isolation valve NPT size is $1 1/4$ -in. (Sensor Size one) and 2-in. (Sensor Size 2).
 - Top mounting is recommended for steam temperatures above 600 °F (315 °C).

Process-Wetted Parts

Integral Manifolds

- 316 SST
- Alloy C-276

Remote Manifolds

- 316 SST
- Alloy C-276

Transmitter Vent Valves and Process Flanges

- 316 SST
- Alloy C-276
- Glass-filled PTFE O-rings

Process Isolation Diaphragms

- 316 SST
- Alloy C-276

Integral Manifold O-Rings

- PTFE/Graphite

Non-Wetted Parts

Sensor Module Fill Fluid

- Silicone oil
- Inert Fill optional

Cover O-rings

- Buna-N

Remote Mounting Brackets

- SST

Sensor Mounting (including nuts, bolts, and gasket)

- Match Process Pipe Material

Transmitter Housing

- Low copper aluminum, NEMA 4x, IP65
- SST (optional)

Paint

- Polyurethane

Bolts

- Carbon Steel

Product Data Sheet

00813-0100-4716, Rev MB
January 2011

Rosemount 3095 MultiVariable

Annubar Type Specification Chart

Option Code	Description	Pak-Lok ⁽¹⁾	Flange-Lok	Flange	Manual and Gear Drive Flo-Tap
T1 ⁽¹⁾	Pak-Lok Body	X			
	Threaded connection				X
A1	150# RF ANSI		X	X	X
A3	300# RF ANSI		X	X	X
A6	600# RF ANSI		X	X	X
A9 ⁽²⁾	900# RF ANSI			X	
AF ⁽²⁾	1500# RF ANSI			X	
AT ⁽²⁾	2500# RF ANSI			X	
D1	DN PN 16		X	X	X
D3	DN PN 40		X	X	X
D6	DN PN 100		X	X	X
R1	150# RTJ Flange		X	X	X
R3	300# RTJ Flange		X	X	X
R6	600# RTJ Flange		X	X	X
R9 ⁽²⁾	900# RTJ Flange			X	
RF ⁽²⁾	1500# RTJ Flange			X	
RT ⁽²⁾	2500# RTJ Flange			X	

(1) Available up to 600# ANSI (1440 psig at 100 °F (99 bar at 38 °C)) rating.

(2) Remote mount only. Maximum allowable pressure will be limited by the transmitter pressure limit of 3626 psi.

Instrument Connections Temperature Ranges

Table 14. Minimum / Maximum Temperature Range

Code	Description	Temperature
G1	Needle Valves, Carbon Steel	-20 to 500 °F (-29 to 260 °C)
G2	Needle Valves, SST	-40 to 600 °F (-40 to 316 °C)
G3	Needle Valves, Alloy C-276	-40 to 600 °F (-40 to 316 °C)
G5	OS&Y Gate Valve, Carbon Steel	-20 to 775 °F (-29 to 413 °C)
G6	OS&Y Gate Valve, SST	-40 to 850 °F (-40 to 454 °C)
G7	OS&Y Gate Valve, Alloy C-276	-40 to 1250 °F (-40 to 677 °C)

Flowmeter Installed in Flanged Pipe Spool Section (option codes H3, H4, and H5)

- All pipe spool sections are flanged pipe sections
- The flanged pipe spool section is constructed from the same material as the pipe.
- Consult the factory for remote temperature measurement and ANSI ratings above 600# and DIN flanges.
- Available in carbon steel (A105) and SST.

Table 15. Flanged Pipe Spool Section Schedule


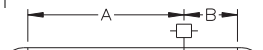

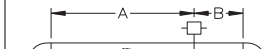


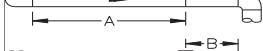
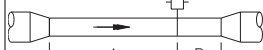
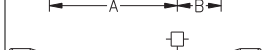
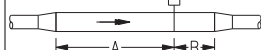
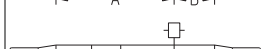
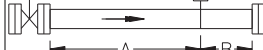
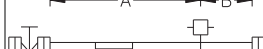
ANSI	Schedule
150# ANSI	40
300# ANSI	40
600# ANSI	80

Table 16. Flange Pipe Spool Section Length

Nominal Pipe Size	Length
2-in. (50 mm)	10.52-in. (267.2 mm)
3-in. (80 mm)	11.37-in. (288.8 mm)
4-in. (100 mm)	12.74-in. (323.6 mm)
6-in. (150 mm)	14.33-in. (364.0 mm)
8-in. (200 mm)	16.58-in. (421.1 mm)

Rosemount 3095 MultiVariable

3095MFA Installation Considerations Straight Run Requirements⁽¹⁾

In Plane 	Upstream Dimensions (Pipe Diameters)					Downstream
	Without Vanes ⁽²⁾		With Vanes ⁽³⁾			
	In Plane A	Out of Plane A	A'	C	C'	
1 	8	10	—	—	—	4
	—	—	8	4	4	4
2 	11	16	—	—	—	4
	—	—	8	4	4	4
3 	23	28	—	—	—	4
	—	—	8	4	4	4
4 	12	12	—	—	—	4
	—	—	8	4	4	4
5 	18	18	—	—	—	4
	—	—	8	4	4	4
6 	30	30	—	—	—	4
	—	—	8	4	4	4

Drill Hole Size According to Sensor Size

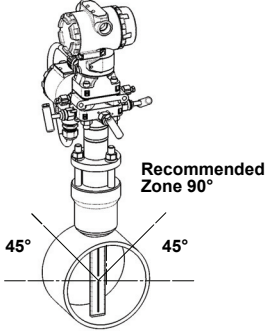
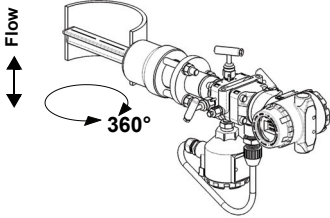
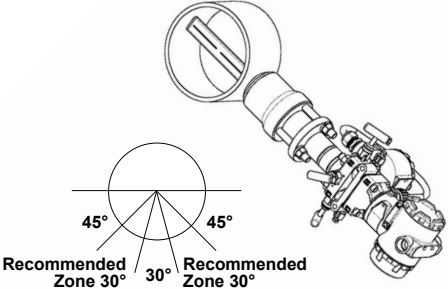
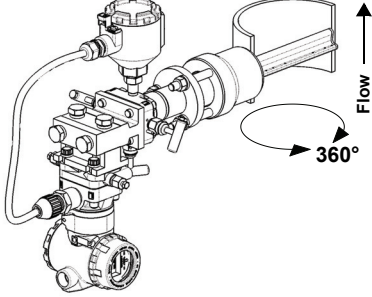
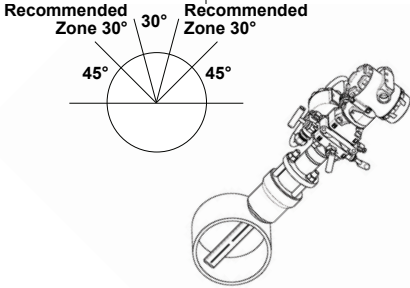
Sensor Size	Diameter
1	³ / ₄ -in. (19 mm)
2	1 ⁵ / ₁₆ -in. (34 mm)
3	2 ¹ / ₂ -in. (64 mm)

(1) Consult the factory for instructions regarding use in square or rectangular ducts.

(2) "In Plane A" means the bar is in the same plane as the elbow. "Out of Plane A" means the bar is perpendicular to the plane of the upstream elbow.

(3) Use straightening vane to reduce the required straight run length.

Flowmeter Orientation (Recommended)⁽¹⁾

Gas (Horizontal)	Gas (Vertical)
 <p>Recommended Zone 90°</p> <p>45° 45°</p>	 <p>Flow</p> <p>360°</p>
Liquid and Steam (Horizontal)	Steam (Vertical)
 <p>Recommended Zone 30° 30° Recommended Zone 30°</p> <p>45° 45°</p>	 <p>Flow</p> <p>360°</p>
Top Mounting for Steam (Horizontal) ⁽²⁾	
 <p>Recommended Zone 30° 30° Recommended Zone 30°</p> <p>45° 45°</p>	

(1) The flowmeter orientation recommendations may vary for the Manual and Gear-Drive Flo-Tap Annubar Types.

(2) Direct mount up to 400 °F (205 °C).

Rosemount 3095 MultiVariable

Pipe I.D. Range Code

See Table 12 on page 21.

For pipes with an Inner Diameter (I.D.) Range / Pipe Wall Thickness not found in this table or with a line size greater than 12-in. (300 mm), choose option code Z and specify the exact pipe dimensions (I.D. and Pipe Wall Thickness) on the Configuration Data Sheet (See document 00806-0100-4010). The Emerson process Management sizing program will determine this code, based on the application piping.

	Line Size			Inner Diameter (I.D.) Range	Pipe Wall Thickness		I.D. Range Code
	Nominal	Max. O.D.	Option Code		ANSI Pipes	Non-ANSI Pipes	
	2-in. (50 mm)	2.625-in. (66.68 mm)	020	1.784 to 1.841-in. (45.31 to 46.76 mm)	0.065 to 0.545-in. (1.7 to 13.8 mm)	0.065 to 0.488-in. (1.7 to 12.4 mm)	A
				1.842 to 1.938-in. (46.79 to 49.23 mm)		0.065 to 0.449-in. (1.7 to 11.4 mm)	B
				1.939 to 2.067-in. (49.25 to 52.50 mm)		0.065 to 0.417-in. (1.7 to 10.6 mm)	C
				2.068 to 2.206-in. (52.53 to 56.03 mm)		0.065 to 0.407-in. (1.7 to 10.3 mm)	D
	2 1/2-in. (63.5 mm)	3.188-in. (80.98 mm)	025	2.207 to 2.322-in. (56.06 to 58.98 mm)	0.083 to 0.563-in. (2.1 to 14.3 mm)	0.083 to 0.448-in. (2.1 to 11.4 mm)	B
				2.323 to 2.469-in. (59.00 to 62.71 mm)		0.083 to 0.417-in. (2.1 to 10.6 mm)	C
				2.470 to 2.598-in. (62.74 to 65.99 mm)		0.083 to 0.435-in. (2.1 to 11.0 mm)	D
				2.599 to 2.647-in. (66.01 to 67.23 mm)		0.083 to 0.515-in. (2.1 to 13.1 mm)	E
	3-in. (80 mm)	3.75-in. (95.25 mm)	030	2.648 to 2.751-in. (67.26 to 69.88 mm)	0.083 to 0.563-in. (2.1 to 14.3 mm)	0.083 to 0.460-in. (2.1 to 11.7 mm)	A
				2.752 to 2.899-in. (69.90 to 73.63 mm)		0.083 to 0.416-in. (2.1 to 10.6 mm)	B
				2.900 to 3.068-in. (73.66 to 77.93 mm)		0.083 to 0.395-in. (2.1 to 10.0 mm)	C
				3.069 to 3.228-in. (77.95 to 81.99 mm)		0.083 to 0.404-in. (2.1 to 10.3 mm)	D
	3 1/2-in. (89 mm)	4.25-in. (107.95 mm)	035	3.229 to 3.333-in. (82.02 to 84.66 mm)	0.120 to 0.600-in. (3.0 to 15.2 mm)	0.120 to 0.496-in. (3.0 to 12.6 mm)	B
				3.334 to 3.548-in. (84.68 to 90.12 mm)		0.120 to 0.386-in. (3.0 to 9.8 mm)	C
				3.549 to 3.734-in. (90.14 to 94.84 mm)		0.120 to 0.415-in. (3.0 to 10.5 mm)	D
	4-in. (100 mm)	5.032-in. (127.81 mm)	040	3.735 to 3.825-in. (94.87 to 97.16 mm)	0.120 to 0.600-in. (3.0 to 15.2 mm)	0.120 to 0.510-in. (3.0 to 13.0 mm)	B
				3.826 to 4.026-in. (97.18 to 102.26 mm)		0.120 to 0.400-in. (3.0 to 10.2 mm)	C
				4.027 to 4.237-in. (102.29 to 107.62 mm)		0.120 to 0.390-in. (3.0 to 9.9 mm)	D
				4.238 to 4.437-in. (107.65 to 112.70 mm)		0.120 to 0.401-in. (3.0 to 10.2 mm)	E
	5-in. (125 mm)	6.094-in. (154.79 mm)	050	4.438 to 4.571-in. (112.73 to 116.10 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.481-in. (3.4 to 12.2 mm)	A
				4.572 to 4.812-in. (116.13 to 122.22 mm)		0.134 to 0.374-in. (3.4 to 9.5 mm)	B
				4.813 to 5.047-in. (122.25 to 128.19 mm)		0.134 to 0.380-in. (3.4 to 9.7 mm)	C
				5.048 to 5.249-in. (128.22 to 133.32 mm)		0.134 to 0.413-in. (3.4 to 10.5 mm)	D
	Sensor Size 1 6-in. (150 mm)	6.93-in. (176.02 mm)	060	5.250 to 5.472-in. (133.35 to 138.99 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.3919-in. (3.4 to 9.9 mm)	A
5.473 to 5.760-in. (139.01 to 146.30 mm)				0.134 to 0.327-in. (3.4 to 8.3 mm)		B	
5.761 to 6.065-in. (146.33 to 154.05 mm)				0.134 to 0.31-in. (3.4 to 7.9 mm)		C	
6.066 to 6.383-in. (154.08 to 162.13 mm)				0.134 to 0.297-in. (3.4 to 7.5 mm)		D	
Sensor Size 2 6-in. (150 mm)	6.93-in. (176.02 mm)	060	5.250 to 5.472-in. (133.35 to 139.99 mm)	0.134 to 1.354-in. (3.4 to 34.4 mm)	0.134 to 1.132-in. (3.4 to 28.7 mm)	A	
			5.473 to 5.760-in. (139.01 to 146.30 mm)		0.134 to 1.067-in. (3.4 to 27.1 mm)	B	
			5.761 to 6.065-in. (146.33 to 154.05 mm)		0.134 to 1.05-in. (3.4 to 26.7 mm)	C	
			6.066 to 6.383-in. (154.08 to 162.13 mm)		0.134 to 1.037-in. (3.4 to 26.3 mm)	D	
Sensor Size 1 7-in. (180 mm)	7.93-in. (201.42 mm)	070	6.384 to 6.624-in. (162.15 to 168.25 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.374-in. (3.4 to 9.5 mm)	B	
			6.625 to 7.023-in. (168.28 to 178.38 mm)		0.134 to 0.216-in. (3.4 to 5.5 mm)	C	
			7.024 to 7.392-in. (178.41 to 187.76 mm)		0.134 to 0.246-in. (3.4 to 6.2 mm)	D	
Sensor Size 2 7-in. (180 mm)	7.93-in. (201.42 mm)	070	6.384 to 6.624-in. (162.15 to 168.25 mm)	0.134 to 1.354-in. (3.4 to 34.4 mm)	0.134 to 1.114-in. (3.4 to 28.3 mm)	B	
			6.625 to 7.023-in. (168.28 to 178.38 mm)		0.134 to 0.956-in. (3.4 to 24.3 mm)	C	
			7.024 to 7.392-in. (178.41 to 187.76 mm)		0.134 to 0.986-in. (3.4 to 25.0 mm)	D	
Sensor Size 1 8-in. (200 mm)	9.688-in. (246.08 mm)	080	7.393 to 7.624-in. (187.78 to 193.65 mm)	0.250 to 0.73-in. (6.4 to 18.5 mm)	0.250 to 0.499-in. (6.4 to 12.6 mm)	B	
			7.625 to 7.981-in. (193.68 to 202.72 mm)		0.250 to 0.374-in. (6.4 to 9.5 mm)	C	
			7.982 to 8.400-in. (202.74 to 213.36 mm)		0.250 to 0.312-in. (6.4 to 7.9 mm)	D	
			8.401 to 8.766-in. (213.39 to 222.66 mm)		0.250 to 0.364-in. (6.4 to 9.2 mm)	E	
Sensor Size 2 8-in. (200 mm)	9.688-in. (246.08 mm)	080	7.393 to 7.624-in. (187.78 to 193.65 mm)	0.250 to 1.47-in. (6.4 to 37.3 mm)	0.250 to 1.239-in. (6.4 to 31.4 mm)	B	
			7.625 to 7.981-in. (193.68 to 202.72 mm)		0.250 to 1.114-in. (6.4 to 28.3 mm)	C	
			7.982 to 8.400-in. (202.74 to 213.36 mm)		0.250 to 1.052-in. (6.4 to 26.7 mm)	D	
			8.401 to 8.766-in. (213.39 to 222.66 mm)		0.250 to 1.104-in. (6.4 to 28.0 mm)	E	
10-in. (250 mm)	11.75-in. (298.45 mm)	100	8.767 to 9.172-in. (222.68 to 232.97 mm)	0.250 to 1.470-in. (6.4 to 37.3 mm)	0.250 to 1.065-in. (6.4 to 27.1 mm)	A	
			9.173 to 9.561-in. (232.99 to 242.85 mm)		0.250 to 1.082-in. (6.4 to 27.5 mm)	B	
			9.562 to 10.020-in. (242.87 to 254.51 mm)		0.250 to 1.012-in. (6.4 to 25.7 mm)	C	
			10.021 to 10.546-in. (254.53 to 267.87 mm)		0.250 to 0.945-in. (6.4 to 24.0 mm)	D	
			10.547 to 10.999-in. (267.89 to 279.37 mm)		0.250 to 1.018-in. (6.4 to 25.9 mm)	E	
			11.000 to 11.373-in. (279.40 to 288.87 mm)		0.250 to 1.097-in. (6.4 to 27.9 mm)	B	
12-in. (300 mm)	13.0375-in. (331.15 mm)	120	11.374 to 11.938-in. (288.90 to 303.23 mm)	0.250 to 1.470-in. (6.4 to 37.3 mm)	0.250 to 0.906-in. (6.4 to 23.0 mm)	C	
			11.939 to 12.250-in. (303.25 to 311.15 mm)		0.250 to 1.159-in. (6.4 to 29.4 mm)	D	

Rosemount 3095MFA Product Certifications

Rosemount 3095MFA with HART

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095M_2/3,4/D Flow Transmitters — QS Certificate of Assessment - EC No. PED-H-20
 Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller —
 Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold —
 Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095MV Flow Transmitters
 — EN50081-1:1992; EN50082-2:1995;
 EN61326-1:2006; EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5 Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations and Zone 0 A Exia IIC T4. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed. For input parameters and installation see control drawing 03095-1020.

Canadian Standards Association (CSA)

- E6 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. CSA enclosure Type 4X suitable for indoor and outdoor hazardous locations. Provides nonincendive RTD connection for Class I, Division 2, Groups A, B, C, and D. Factory Sealed. Install in accordance with Rosemount Drawing 03095-1024. Approved for Class I, Division 2, Groups A, B, C, and D.
- I6 Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. when installed in accordance with Rosemount drawing 03095-1021. Temperature Code T3C. For input parameters and installation see control drawing 03095-1021.

European Certifications


- I1 ATEX Intrinsic Safety
 Certificate Number: BAS98ATEX1359X  II 1 G
 Ex ia IIC T5 (T_{amb} = -45 °C to 40 °C)
 Ex ia IIC T4 (T_{amb} = -45 °C to 70 °C)
CE 1180

TABLE 17. Connection Parameters (Power/Signal Terminals)

U _i = 30 V
I _i = 200 mA
P _i = 1.0 W
C _i = 0.012 μF
L _i = 0

TABLE 18. Temperature Sensor Connection Parameters


U _o = 30 V
I _o = 19 mA
P _o = 140 mW
C _i = 0.002 μF
L _i = 0

TABLE 19. Temp Sensor Terminals Connection Parameters

C _o = 0.066 μF	Gas Group IIC
C _o = 0.560 μF	Gas Group IIB
C _o = 1.82 μF	Gas Group IIA
L _o = 96 mH	Gas Group IIC
L _o = 365 mH	Gas Group IIB
L _o = 696 mH	Gas Group IIA
L _o /R _o = 247 μH/ohm	Gas Group IIC
L _o /R _o = 633 μH/ohm	Gas Group IIB
L _o /R _o = 633 μH/ohm	Gas Group IIA

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN60079-11, Clause 6.3.12. This condition must be accounted for during installation.

- N1 ATEX Type N
 Certificate Number: BAS98ATEX3360X  II 3 G
 Ex nL IIC T5 (T_{amb} = -45 °C to 40 °C)
 Ex nL IIC T4 (T_{amb} = -45 °C to 70 °C)
 U_i = 55 V

CE


The apparatus is designed for connection to a remote temperature sensor such as a resistance temperature detection (RTD).

Rosemount 3095 MultiVariable

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN60079-15, Clause 6.8.1. This condition must be accounted for during installation.

E1 ATEX Flameproof


Certificate Number: KEMA02ATEX2320X  II 1/2 G
EEx d IIC T5 (-50 °C ≤ T_{amb} ≤ 80 °C)
T6 (-50 °C ≤ T_{amb} ≤ 65 °C)

CE 1180

Special Conditions for Safe Use (x):

The device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

ND ATEX Dust

Certificate Number: KEMA02ATEX2321  II 1 D
V = 55 Vdc MAX
I = 23 mA MAX
IP66
CE 1180

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

K5 E5 and I5 combination

K6 E6 and I6 combination

K1 I1, N1, E1, and ND combination

Rosemount 3095MFA with *Fieldbus*

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095F_2/3,4/D and 3095M_2/3,4/D Flow Transmitters
— QS Certificate of Assessment - EC No. PED-H-20
Module H Conformity Assessment
All other 3095_ Transmitters/Level Controller
— Sound Engineering Practice
Transmitter Attachments: Process Flange - Manifold
— Sound Engineering Practice
Primary Elements, Flowmeter
— See appropriate Primary Element QIG

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095 Flow Transmitters

— EN50081-1:1992; EN50082-2:1995; EN61326-1:2006;
EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Rosemount 3095MFA Fieldbus Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5** Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5** Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.

For input parameters and installation, see control drawing 03095-1020.

- IE** FISCO for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

K5 E5 and I5 combination

Canadian Standards Association (CSA)

- IF** CSA FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

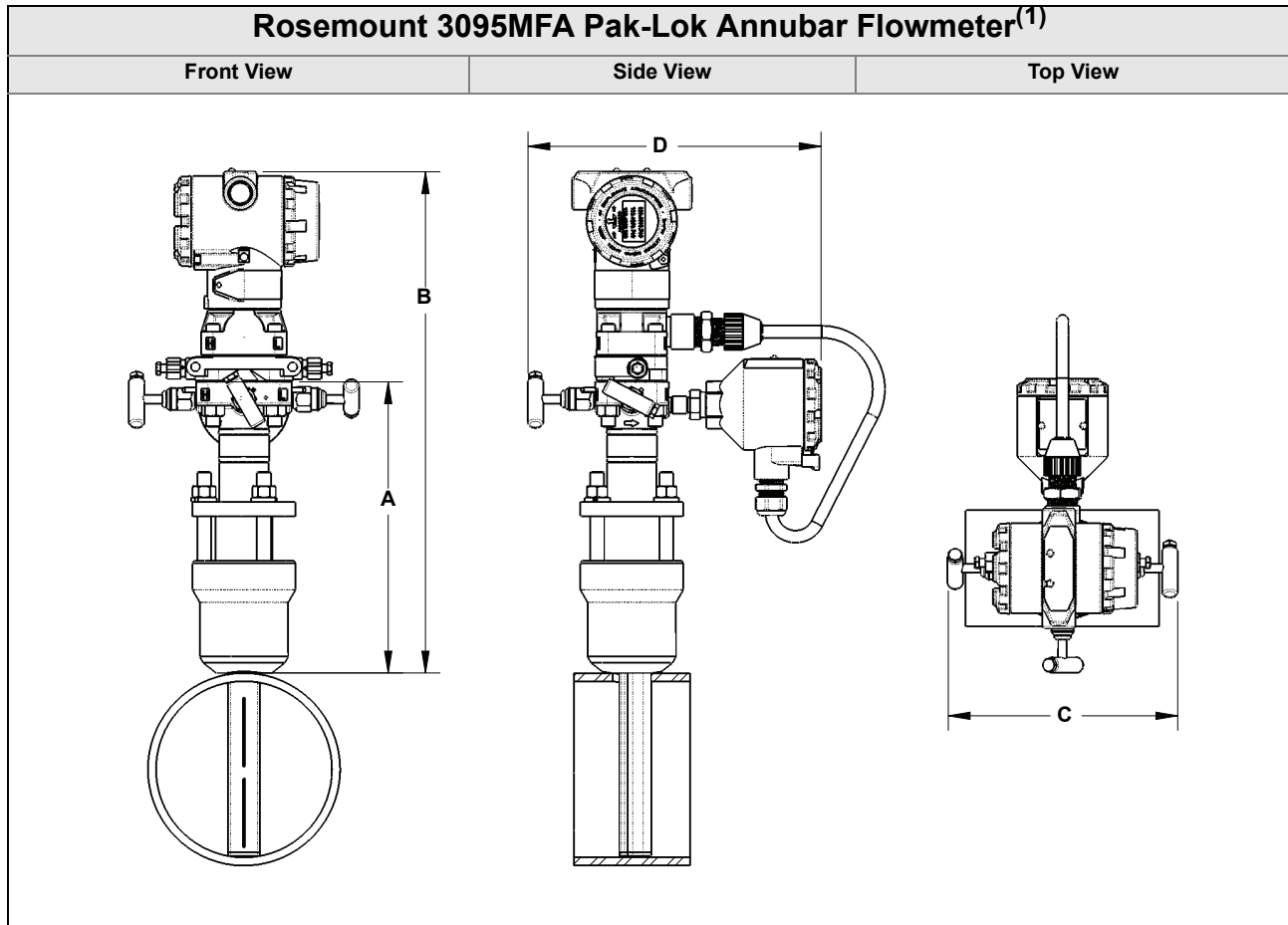
European Certifications

- IA** ATEX FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

Australian Certifications

- IG** IECEx FISCO Intrinsic Safety

DIMENSIONAL DRAWINGS



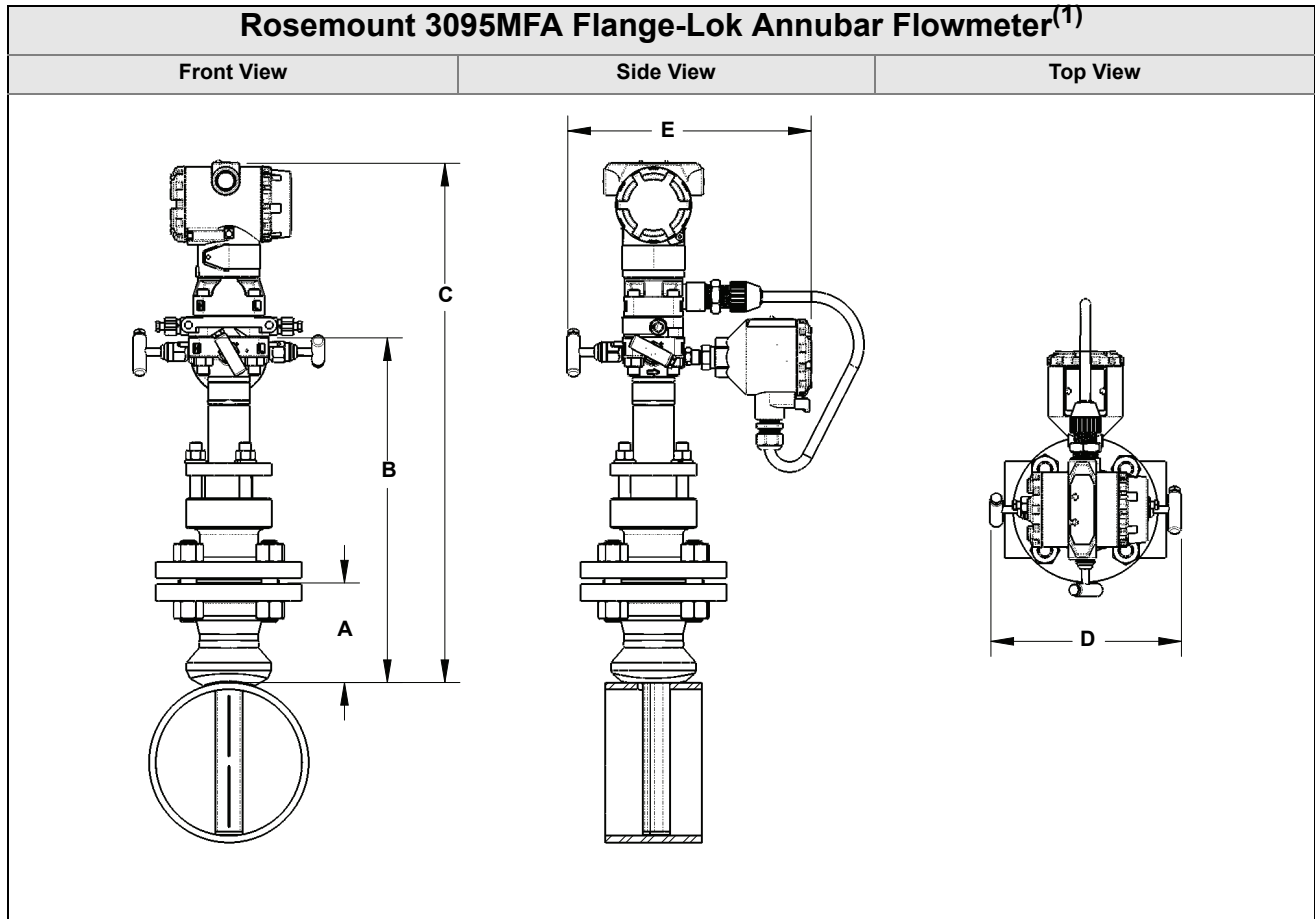
(1) The Pak-Lok Annubar model is available up to 600# ANSI (1440 psig at 100 °F (99 bar at 38 °C)).

Table 20. Pak-Lok Annubar Flowmeter Dimensional Data

Sensor Size	A (Max)	B (Max)	C (Max)	D (Max)
1	7.50 (190.5)	14.60 (370.8)	9.00 (228.6)	11.25 (285.8)
2	9.25 (235.0)	16.35 (415.3)	9.00 (228.6)	11.25 (285.8)
3	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)

Dimensions are in inches (millimeters)

Rosemount 3095 MultiVariable



(1) The Flange-Lok Annubar model can be direct mounted up to 600# ANSI (1440 psig at 100 °F (99 bar at 38 °C)).

Table 21. Flange-Lok Annubar Flowmeter Dimensional Data

Sensor Size	Flange Size and Rating	A ± 0.125 (3.2)	B ± 0.25 (6.4)	C (Max)	D (Max)	E (Max)
1	1½ – 150#	3.88 (98.6)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
1	1½ – 300#	4.13 (104.9)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
1	1½ – 600#	4.44 (112.8)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
1	DN40/PN16	3.09 (78.5)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
1	DN40/PN40	3.21 (81.5)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
1	DN40/ PN100	3.88 (98.6)	12.25 (311.2)	19.35 (491.5)	9.00 (228.6)	11.25 (285.8)
2	2 – 150#	4.13 (104.9)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
2	2 – 300#	4.38 (111.3)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
2	2 – 600#	4.76 (120.9)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
2	DN50/PN16	3.40 (86.4)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
2	DN50/PN40	3.51 (89.2)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
2	DN50/PN100	4.30 (109.2)	14.25 (362.0)	21.35 (542.3)	9.00 (228.6)	11.25 (285.8)
3	3 – 150#	4.63 (117.6)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)
3	3 – 300#	5.00 (127.0)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)
3	3 – 600#	5.38 (136.7)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)
3	DN80/PN16	3.84 (97.5)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)
3	DN80/PN40	4.16 (105.7)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)
3	DN80/PN100	4.95 (125.7)	17.50 (444.5)	24.60 (624.8)	9.00 (228.6)	11.25 (285.8)

Dimensions are in inches (millimeters)

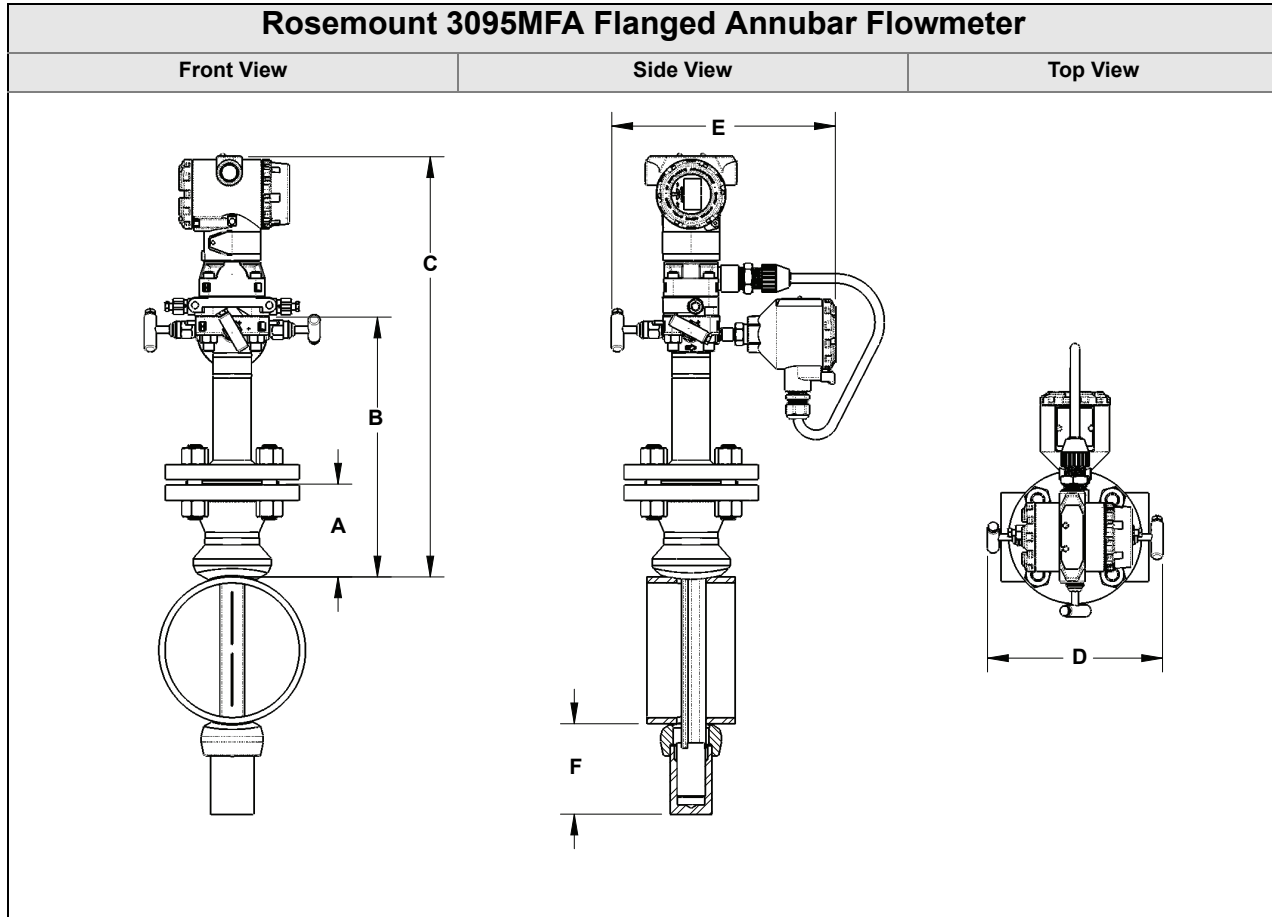


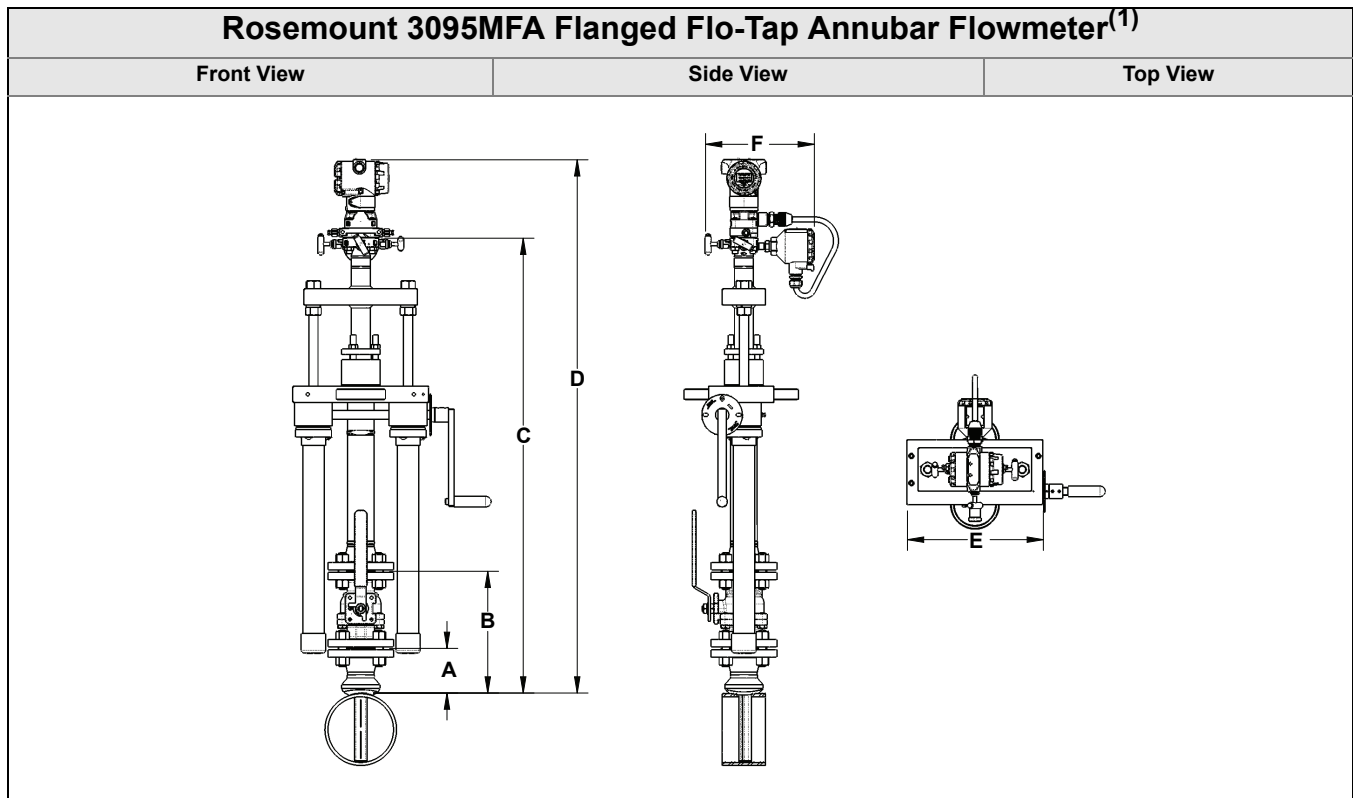
Table 22. Flanged Annubar Flowmeter Dimensional Data

Sensor Size	Flange Size and Rating	A ± 0.125 (3.2)	B ± 0.25 (6.4)	C ± 0.25 (6.4)	D (Max)	E (Max)	F (Max)
1	1½ – 150#	3.88 (98.6)	11.00 (279.4)	18.10 (459.7)	9.00 (228.6)	11.25 (285.8)	3.50 (88.9)
1	1½ – 300#	4.13 (104.9)	11.00 (279.4)	18.10 (459.7)	9.00 (228.6)	11.25 (285.8)	3.50 (88.9)
1	1½ – 600#	4.44 (112.8)	11.00 (279.4)	18.10 (459.7)	9.00(228.6)	11.25 (285.8)	3.50 (88.9)
1	DN40/PN16	3.09 (78.5)	11.00 (279.4)	18.10 (459.7)	9.00 (228.6)	11.25 (285.8)	3.50 (88.9)
1	DN40/PN40	3.21 (81.5)	11.00 (279.4)	18.10 (459.7)	9.00 (228.6)	11.25 (285.8)	3.50 (88.9)
1	DN40/ PN100	3.88 (98.6)	11.00 (279.4)	18.10 (459.7)	9.00 (228.6)	11.25 (285.8)	3.50 (88.9)
1	1½ – 900#	4.94 (125.5)	9.32 (236.6)	—	—	—	3.50 (88.9)
1	1½ – 1500#	4.94 (125.5)	9.32 (236.6)	—	—	—	3.50 (88.9)
1	1½ – 2500#	6.76 (171.7)	11.64 (295.5)	—	—	—	4.00 (101.6)
2	2 – 150#	4.13 (104.9)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	2 – 300#	4.38 (111.3)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	2 – 600#	4.76 (120.9)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	DN50/PN16	3.40 (86.4)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	DN50/PN40	3.51 (89.2)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	DN50/ PN100	4.30 (109.2)	12.00 (304.8)	19.10 (485.1)	9.00 (228.6)	11.25 (285.8)	5.00 (127.0)
2	2 – 900#	5.88 (149.4)	10.51 (266.8)	—	—	—	5.00 (127.0)
2	2 – 1500#	5.88 (149.4)	10.51 (266.8)	—	—	—	5.00 (127.0)
2	3 – 2500#	9.87 (250.7)	15.62 (396.7)	—	—	—	4.50 (114.3)

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Table 22. Flanged Annubar Flowmeter Dimensional Data

Sensor Size	Flange Size and Rating	A ± 0.125 (3.2)	B ± 0.25 (6.4)	C ± 0.25 (6.4)	D (Max)	E (Max)	F (Max)
3	3 – 150#	4.63 (117.6)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	3 – 300#	5.00 (127.0)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	3 – 600#	5.38 (136.7)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	DN80/PN16	3.84 (97.5)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	DN80/PN40	4.16 (105.7)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	DN80/ PN100	4.95 (125.7)	13.50 (342.9)	20.60 (523.2)	9.00 (228.6)	11.25 (285.8)	4.00 (101.6)
3	4 – 900#	8.19 (208.0)	13.44 (341.3)	—	—	—	7.00 (177.8)
3	4 – 1500#	8.56 (217.4)	13.81 (350.8)	—	—	—	7.00 (177.8)
3	4 – 2500#	11.19 (284.2)	17.32 (439.8)	—	—	—	7.00 (177.8)
<i>Dimensions are in inches (millimeters)</i>							



(1) The Flanged Flo-Tap Annubar Flowmeter is available with both the manual and gear drive options.

Table 23. Flanged Flo-Tap Annubar Flowmeter Dimensional Data

Sensor Size	Flange Size and Rating	A ± 0.125 (3.2)	B ± 0.25 (6.4)	C ¹ (Max) (Gear Drive)	C ¹ (Max) (Manual)	D (Max)	E (Max)	F (Max)
1	1½ – 150#	3.88 (98.5)	10.50 (266.7)	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
1	1½ – 300#	4.13 (104.9)	11.75 (298.5)	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
1	1½ – 600#	4.44 (112.8)	14.06 (357.2)	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
1	DN40/PN16	3.09 (78.5)	See Note.	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
1	DN40/PN40	3.21 (81.5)	See Note.	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
1	DN40/PN100	3.88 (98.6)	See Note.	—	17.9 (454.7)	C + 7.10 (180.3)	10.50 (266.7)	11.25 (285.8)
2	2 – 150#	4.13 (104.9)	11.25 (285.8)	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
2	2 – 300#	4.38 (111.3)	13.00 (330.2)	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
2	2 – 600#	4.76 (120.9)	16.38 (416.0)	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
2	DN50/PN16	3.40 (86.4)	See Note.	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
2	DN50/PN40	3.51 (89.2)	See Note.	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
2	DN50/PN100	4.30 (109.2)	See Note.	24.6 (624.8)	21.4 (543.6)	C + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)
3	3 – 150#	4.63 (117.6)	12.75 (323.9)	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)
3	3 – 300#	5.00 (127.0)	16.25 (412.8)	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)
3	3 – 600#	5.38 (136.7)	19.50 (495.4)	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)
3	DN80/PN16	3.84 (97.5)	See Note.	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)
3	DN80/PN40	4.16 (105.7)	See Note.	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)
3	DN80/PN100	4.95 (125.7)	See Note.	26.5 (673.1)	23.3 (591.8)	C + 7.10 (180.3)	14.13 (358.9)	11.25 (285.8)

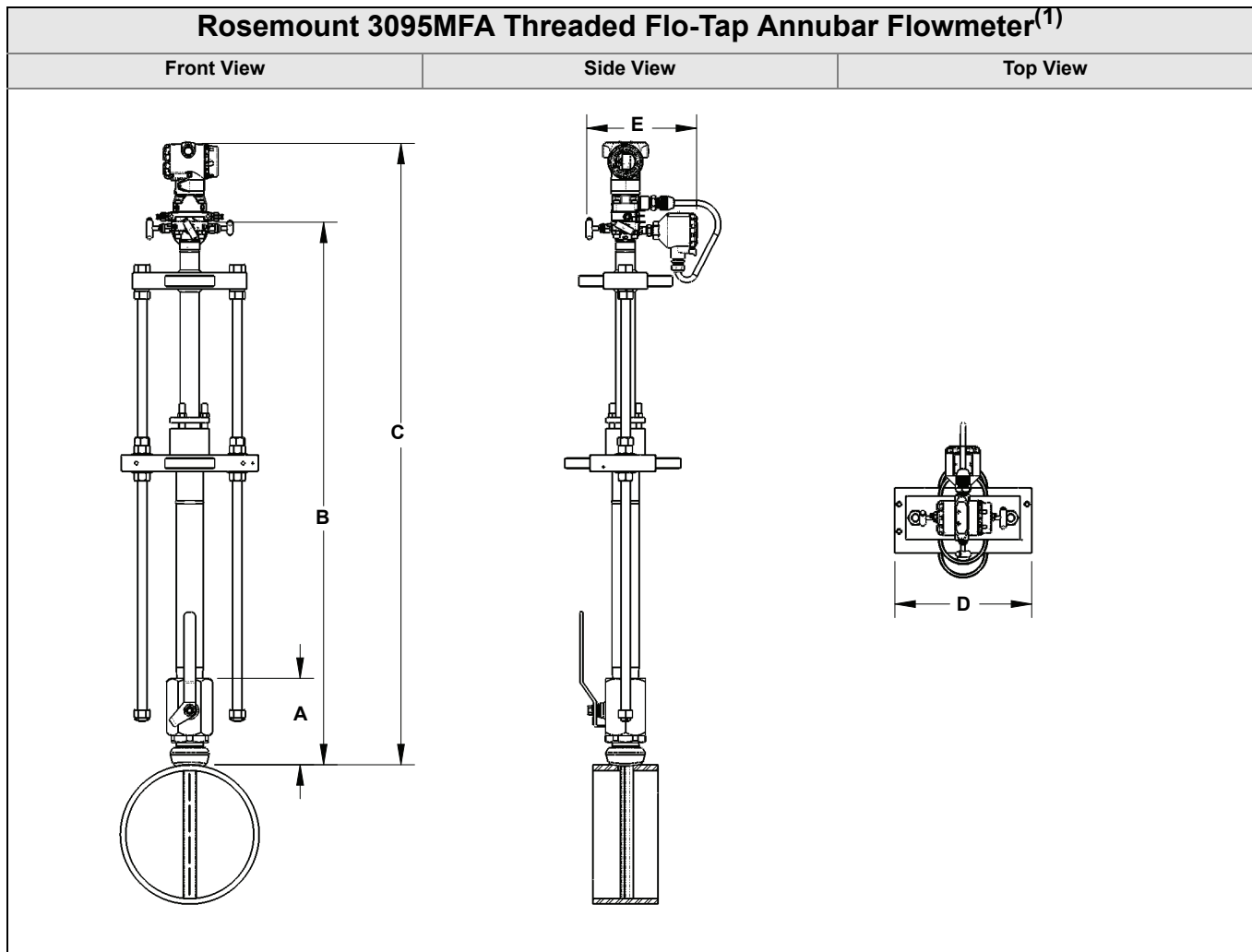
Dimensions are in inches (millimeters)

Note: Customer Supplied.

Inserted, C Dimension = Pipe I.D. + Wall Thickness + B + C¹

Retracted, C Dimension = 2 x (Pipe I.D. + Wall Thickness + B) + C¹

Rosemount 3095 MultiVariable



(1) The Threaded Flo-Tap Annubar Flowmeter is available with both the manual and gear drive options.

Table 24. Threaded Flo-Tap Annubar Flowmeter Dimensional Data

Sensor Size	A ± 0.50 (12.7)	B ¹ (Max) (Gear Drive)	B ¹ (Max) (Manual)	C (Max)	D (Max)	E (Max)
				B + 7.10 (180.3)		
1	6.76 (171.8)	—	17.40 (442.0)	B + 7.10 (180.3)	10.50 (266.7.0)	11.25 (285.8)
2	8.17 (207.5)	23.70 (602.0)	20.80 (528.3)	B + 7.10 (180.3)	12.56 (319.0)	11.25 (285.8)

Sensor Size 3 is not available in a Threaded Flo-Tap.

Dimensions are in inches (millimeters)

Inserted, B Dimension = Pipe I.D. + Wall Thickness + A + B¹
 Retracted, B Dimension = 2 x (Pipe I.D. + Wall Thickness + A) + B¹

Rosemount 3095MFC Compact Orifice Flowmeter

Table 25. Rosemount 3095MFC Compact Orifice Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Model	Product Description	
3095MFC	Compact Orifice Flowmeter	
Primary Element Technology		
Standard		Standard
C	Conditioning Orifice Plate	★
P	Orifice Plate	★
Material Type		
Standard		Standard
S	316 SST	★
Line Size		
Standard		Standard
005 ⁽¹⁾	1/2-in. (15 mm)	★
010 ⁽¹⁾	1-in. (25 mm)	★
015 ⁽¹⁾	1 1/2-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 ⁽²⁾	10-in. (250 mm)	★
120 ⁽²⁾	12-in. (300 mm)	★
Primary Element Style		
Standard		Standard
N	Square Edged	★
Beta Ratio		
Standard		Standard
040	0.40 Beta Ratio (β)	★
065 ⁽³⁾	0.65 Beta Ratio (β)	★
Temperature Measurement		
Standard		Standard
T	Integral RTD	★
0	No Temperature Sensor	★
Expanded		
R	Remote Thermowell and RTD	
Transmitter Connection Platform		
Standard		Standard
3	Direct-mount, 3-valve Integral Manifold, SST	★
7	Remote-mount, 1/4-in. NPT connections	★
Differential Pressure Range		
Standard		Standard
1	0 to 25 in H ₂ O (0 to 62,3 mbar)	★
2	0 to 250 in H ₂ O (0 to 623 mbar)	★
3	0 to 1000 in H ₂ O (0 to 2,5 bar)	★
Static Pressure Range		
Standard		Standard
B	0 – 8 to 0 – 800 psia (0 –55,16 to 0 – 5515,8 kPa)	★
C	0 – 8 to 0 – 800 psig (0 –55,16 to 0 – 5515,8 kPa)	★
D	0 – 36.2 to 0 – 3626 psia (0 –250 to 0 – 25000 kPa)	★
E	0 – 36.2 to 0 – 3626 psig (0 –250 to 0 – 25000 kPa)	★

Rosemount 3095 MultiVariable

Table 25. Rosemount 3095MFC Compact Orifice Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Output Protocol			
Standard			Standard
A	4–20 mA with digital signal based on HART protocol		★
V	FOUNDATION fieldbus protocol		★
Transmitter Housing Style		Conduit Entry Size	
Standard			Standard
1A	Polyurethane-covered, Aluminum	¹ / ₂ -14 NPT	★
1B	Polyurethane-covered, Aluminum	M20 x 1.5 (CM20)	★
1J	SST	¹ / ₂ -14 NPT	★
1K	SST	M20 x 1.5 (CM20)	★
Expanded			
1C	Polyurethane-covered, Aluminum	G ¹ / ₂	
1L	SST	G ¹ / ₂	

Options (Include with selected model number)

Performance Class			
Standard			Standard
U3 ⁽⁴⁾	Ultra for Flow: up to ±0.70% mass flow rate accuracy, up to 10:1 turndown, 10-year stability, limited 12-year warranty		★
Plantweb Control Functionality			
Standard			Standard
A01	FOUNDATION fieldbus Advanced Control Function Block Suite		★
Installation Accessories			
Standard			Standard
A	ANSI Alignment Ring (150#), (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes)		★
C	ANSI Alignment Ring (300#), (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes)		★
D	ANSI Alignment Ring (600#), (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes)		★
G	DIN Alignment Ring (PN 16)		★
H	DIN Alignment Ring (PN 40)		★
J	DIN Alignment Ring (PN 100)		★
Expanded			
B	JIS Alignment Ring (10K)		
R	JIS Alignment Ring (20K)		
S	JIS Alignment Ring (40K)		
Remote Adapters			
Standard			Standard
E	Flange adapters 316 SST (¹ / ₂ -in. NPT)		★
High Temperature Applications			
Expanded			
T	Graphite Valve Packing (T _{max} = 850 °F)		
Flow Calibration			
Expanded			
WC ⁽⁵⁾	Discharge Coefficient Verification (3 point)		
WD ⁽⁵⁾	Discharge Coefficient Verification (10 point)		
Pressure Testing			
Expanded			
P1	Hydrostatic Testing		
Special Cleaning			
Expanded			
P2	Cleaning for Special Processes		
PA	Cleaning per ASTM G93 Level D (section 11.4)		
Special Inspection			
Standard			Standard
QC1	Visual & Dimensional Inspection with Certificate		★
QC7	Inspection & Performance Certificate		★

Product Data Sheet

00813-0100-4716, Rev MB
January 2011

Rosemount 3095 MultiVariable

Table 25. Rosemount 3095MFC Compact Orifice Flowmeter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Transmitter Calibration Certification		
Standard		Standard
Q4	Calibration Data Certificate for Transmitter	★
Quality Certification for Safety		
Standard		Standard
QS	Prior-use Certificate of FMEDA data	★
Material Traceability Certification		
Standard		Standard
Q8 ⁽⁶⁾	Material Traceability Certification per EN 10204:2004 3.1	★
Code Conformance		
Expanded		
J2	ANSI / ASME B31.1	
J3	ANSI / ASME B31.3	
Materials Conformance		
Expanded		
J5 ⁽⁷⁾⁽⁸⁾	NACE MR-0175 / ISO 15156	
Country Certification		
Expanded		
J1	Canadian Registration	
Product Certifications		
Standard		Standard
E5	FM Approvals Explosion-proof	★
I5	FM Approvals Intrinsic Safety and Non-Incendive	★
K5	FM Approvals Explosion-proof, Intrinsic Safety, and Non-Incendive (combination of E5 and I5)	★
E6	CSA Explosion-proof	★
I6	CSA Intrinsically Safe, Division 2	★
K6	CSA Explosion-proof, Intrinsically Safe, Division 2	★
I1	ATEX Intrinsic Safety	★
E1	ATEX Flameproof	★
N1	ATEX Type n	★
K1	ATEX Flameproof, Intrinsic Safety, Type n	★
ND	ATEX Dust	★
E4	TIIS Flameproof Certification	★
I7	IECEx Intrinsically Safe	★
Alternate Transmitter Material of Construction		
Standard		Standard
L1 ⁽⁸⁾	Inert Sensor Fill Fluid	★
Digital Display		
Standard		Standard
M5	Integral mount LCD Display	★
Terminal Blocks		
Standard		Standard
T1	Transient Protection	★
Manifold for Remote Mount Option		
Standard		Standard
F2	3-Valve Manifold, SST	★
F6	5-Valve Manifold, SST	★
Typical Model Number: 3095MFC C S 040 N 040 0 3 B A 1A		

(1) Not available for Primary Element Type code C.

(2) Requires the selection of an alignment ring option code in the Installation Accessories section.

(3) For 2-in. (50.8 mm) line sizes the Beta Ratio is 0.6 for Primary Element Type code C.

(4) Ultra for Flow applicable for HART protocol, DP ranges 2 and 3 with SST isolator material and silicone fill fluid options only.

(5) Not available with Primary Element Type code P.

(6) Instrument valves not included in Traceability Certification.

Rosemount 3095 MultiVariable

(7) Materials of Construction comply with metallurgical requirements within NACE MR0175/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.

(8) Not available with DP range 1.

Rosemount 3095MFC Specifications

3095MFC Performance Specifications

System Reference Accuracy

Percent (%) of mass flow rate

TABLE 26. 3095MFCC - Conditioning Orifice Plate Technology⁽¹⁾

Beta	3095MFCC (8:1 flow turndown)	3095MFCC with Ultra for Flow (10:1 flow turndown)
0.4	±1.40%	±0.90%
0.65	±1.85%	±1.25%

(1) For line sizes greater than 8 in. (200 mm), see the Rosemount DP Flowmeters and Primary Elements Product Data Sheet (document number 00813-0100-4485).

TABLE 27. 3095MFCCP - Compact Orifice Plate Technology⁽¹⁾

Beta	3095MFCCP (8:1 flow turndown)	3095MFCCP with Ultra for Flow (10:1 flow turndown)
0.4	±1.85%	±1.35%
0.65	±1.85%	±1.35%

(1) For line sizes less than 2-in. (50mm) or greater than 8 in. (200 mm), see the Rosemount DP Flowmeters and Primary Elements Product Data Sheet (document number 00813-0100-4485).

Repeatability

±0.1%

Line Sizes

- 1/2-in. (15 mm) – not available for the 3095MFCC
- 1-in. (25 mm) – not available for the 3095MFCC
- 1 1/2-in. (40 mm) – not available for the 3095MFCC
- 2-in. (50 mm)
- 3-in. (80 mm)
- 4-in. (100 mm)
- 6-in. (150 mm)
- 8-in. (200 mm)
- 10-in. (250 mm)
- 12-in. (300 mm)

Output

Two-wire 4–20 mA, user-selectable for DP, AP, GP, PT, mass flow, or totalized flow. Digital HART protocol superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol.

Performance Statement Assumptions

- Measured pipe I.D.
- Electronics are trimmed for optimum flow accuracy

Sizing

Contact an Emerson Process Management representative for assistance. A Configuration Data Sheet is required prior to order for application verification.

3095MFC Functional Specifications

Service

- Liquid
- Gas
- Steam

Power Supply

4–20 mA option

- External power supply required. Standard transmitter (4–20 mA) operates on 11 to 55 Vdc with no load

Process Temperature Limits

Direct Mount Transmitter

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

Remote Mount Transmitter

- 850 °F (454 °C) – SST

Transmitter Temperature Limits

Ambient

- -40 to 185 °F (-40 to 85 °C)
- with integral display: -4 to 175 °F (-20 to 80 °C)

Storage

- -50 to 230 °F (-46 to 110 °C)
- with integral display: -40 to 185 °F (-40 to 85 °C)

Differential Pressure Limits

Maximum differential pressure (DP) up to 800 inH₂O.

Pressure Limits⁽¹⁾

Direct Mount Transmitter

- Pressure retention per ANSI B16.5 600# or DIN PN 100

Overpressure Limits

0 to 2 times the absolute pressure range with a maximum of 3626 psia (250 bar).

Static Pressure Limits

Operates within specification between static pressures of 0.5 psia (0.03 bar-A) and the URL of the static pressure sensor.

Vibration Limits

Qualified per IEC61298-3 (1998) for field with high vibration level or pipeline with high vibration level (10-60Hz 0.21mm displacement peak amplitude / 60 - 2000Hz 3g).

(1) Static pressure selection may effect pressure limitations.

Product Data Sheet

00813-0100-4716, Rev MB

January 2011

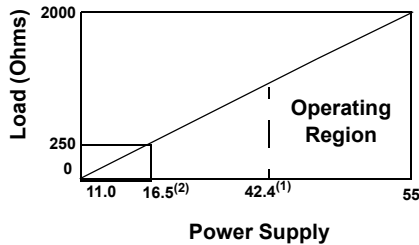
Rosemount 3095 MultiVariable

The weight and length of the transmitter assembly shall not exceed 5.8 lbs and 7.75-in.

Load Limitations

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

$$\text{Maximum Loop Resistance} = \frac{\text{Power Supply} - 11.0}{0.022}$$



(1) For CSA approval, power supply must not exceed 42.4 Vdc.

(2) HART protocol communication requires a loop resistance value between 250-1100 ohms, inclusive.

FOUNDATION fieldbus (output option code V)

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)

Humidity Limits

- 0–100% relative humidity

Turn-On Time

Digital and analog measured variables will be within specification 7 – 10 seconds after power is applied to the transmitter.

Digital and analog flow output will be within specifications 10 – 14 seconds after power is applied to the transmitter.

Damping

Analog output response to a step input change is user-selectable from 0 to 29 seconds for one time constant. This software damping is in addition to sensor module response time.

Failure Mode Alarm

Output Code A

If self-diagnostics detect a non-recoverable transmitter failure, the analog signal will be driven either below 3.75 mA or above 21.75 mA to alert the user. High or low alarm signal is user-selectable by internal jumper pins.

Output Code V

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable(s).

Configuration

475 Field Communicator

- Performs traditional transmitter maintenance functions

3095 MultiVariable Engineering Assistant (EA) software package

- Contains built-in physical property database
- Enables mass flow configuration, maintenance, and diagnostic functions via HART modem (output option code A)
- Enables mass flow configuration via PCMCIA Interface for FOUNDATION fieldbus (output option code V)

Physical Properties Database

- Maintained in Engineering Assistant Software Configurator
- Physical properties for over 110 fluids
- Natural gas per AGA
- Steam and water per ASME
- Other database fluids per American Institute of Chemical Engineers (AIChE)
- Optional custom entry

FOUNDATION fieldbus Function Blocks

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.

5 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.

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.

Rosemount 3095 MultiVariable

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.

3095MFC Physical Specifications

Temperature Measurement

Integral RTD

- 100 Ohm platinum RTD temperature sensor assembly (316 SST Mineral Insulated Cable) with 1/4-in. NPT connection to wafer side and 1/2-in. NPT connection to transmitter RTD sensor is separated from process fluid by 1/16-in. and is pressure retaining rated for ANSI 600#. Complies with IEC-751 Class B accuracy. Meets Intrinsic Safety certification, see "Rosemount 3095MFC Specifications" on page 44.

Remote RTD

- 100 Ohm platinum with 1/2-in. NPT nipple and union (078 series with Rosemount 644 housing)
Model 0078D21N00A025T32Ex
Connection Head: 00644-4410-0011
- Standard RTD cable is shielded armored cable, length is 12-ft. (3.66 m)
- Remote RTD material is SST

Thermowell

- 1/2-in. x 1/2-in. NPT, 316 SST

Electronic Connections for Remote Mount

- 1/2-14 NPT, G1/2, and M20 x 1.5 (CM20) conduit. HART interface connections fixed to terminal block for output code A

Process-Wetted Parts

Integral Manifolds

- 316 SST
- Alloy C-276

Remote Manifolds

- 316 SST
- Alloy C-276

Transmitter Vent Valves and Process Flanges

- 316 SST
- Alloy C-276
- Glass-filled PTFE O-rings

Process Isolating Diaphragms

- 316L SST
- Alloy C-276

Integral Manifold O-Rings

- PTFE/Graphite

Non-Wetted Parts

Sensor Module Fill Fluid

- Silicone oil
- Inert Fill optional

Cover O-rings

- Buna-N

Remote Mounting Brackets

- SST

Electronic Housing

- Low copper aluminum, NEMA 4x, IP65
- SST (optional)

Paint

- Polyurethane

Bolts

- CS

Material of Construction

Body/Plate

- 316 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.

Transmitter Connections

Remote Mount

- Available with 1/4-in. (standard) or 1/2-in. (option code E) connections

Orifice Type

- Square edged, Wafer style

Orifice Pressure Taps

- Corner

Process Connections

Mounts between the following flange configurations

ASME B16.5 (ANSI)	DIN	JIS
Class 150	PN16 (option code G)	10k (option code B)
Class 300	PN40 (option code H)	20k (option code R)
Class 600	PN100 (option code H)	40k (option code S)

ANSI alignment ring is included as standard when ordering.

Product Data Sheet

00813-0100-4716, Rev MB

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Rosemount 3095 MultiVariable

Typical Orifice Hole Sizes (For 3095MFCC)

Beta is calculated by: $\beta = d_C / \text{Pipe ID}$, where the calculated bore is equal to 2 x typical orifice hole size ($d_C = 2d$). The table below shows the diameter of each of the four typical orifice holes.

TABLE 28. $\beta = 0.4^{(1)(2)}$

Line Size	3095MFCC	3095MFCP
1/2-in. (15 mm)	Not Available	0.249 (6.325)
1-in. (25 mm)	Not Available	0.420 (10.668)
1 1/2-in. (40 mm)	Not Available	0.644 (16.358)
2-in. (50 mm)	0.413 (10.490)	0.827 (21.006)
3-in. (80 mm)	0.614 (15.596)	1.227 (31.166)
4-in. (100 mm)	0.805 (20.447)	1.610 (40.894)
6-in. (150 mm)	1.213 (30.810)	2.426 (61.620)
8-in. (200 mm)	1.596 (40.538)	3.192 (81.077)
10-in. (250 mm)	2.004 (50.902)	4.008 (101.80)
12-in. (300 mm)	2.400 (60.960)	4.800 (121.92)

(1) Measurement is in inches (millimeters)

(2) Tolerance = ± 0.002 -in.

TABLE 29. $\beta = 0.65^{(1)(2)}$

Line Size	3095MFCC	3095MFCP
1/2-in. (15 mm)	Not Available	0.404 (10.262)
1-in. (25 mm)	Not Available	0.682 (17.323)
1 1/2-in. (40 mm)	Not Available	1.047 (26.594)
2-in. (50 mm)	0.620 (15.748) ⁽³⁾	1.344 (34.138)
3-in. (80 mm)	0.997 (25.324)	1.994 (50.648)
4-in. (100 mm)	1.308 (33.223)	2.617 (66.472)
6-in. (150 mm)	1.971 (50.063)	3.942 (100.127)
8-in. (200 mm)	2.594 (65.888)	5.188 (131.775)
10-in. (250 mm)	3.257 (82.728)	6.513 (165.43)
12-in. (300 mm)	3.900 (99.060)	7.800 (198.120)

(1) Measurement is in inches (millimeters)

(2) Tolerance = ± 0.002 -in.

(3) Beta (β) = 0.60-in. (15.24 mm) for 2-in. line size only.

3095MFC Weight

Line Size	Direct Mount (D3) ⁽¹⁾⁽²⁾	Remote Mount (R3) ⁽¹⁾
1/2-in. (15 mm)	9.50 (4.69)	6.3 (3.11)
1-in. (25 mm)	10.25 (5.06)	7.05 (3.48)
1 1/2-in. (40 mm)	10.75 (5.31)	7.55 (3.73)
2-in. (50 mm)	11.00 (5.43)	7.80 (3.85)
3-in. (80 mm)	13.00 (6.42)	9.80 (4.84)
4-in. (100 mm)	15.50 (7.65)	12.30 (6.07)
6-in. (150 mm)	20.45 (9.28)	17.25 (7.83)
8-in. (200 mm)	24.95 (11.32)	21.75 (9.87)
10-in. (250 mm)	30.70 (13.92)	27.50 (13.58)
12-in. (300 mm)	36.70 (16.64)	33.50 (16.54)

(1) Measurement in lb (kg).

(2) Includes 3095 MultiVariable transmitter.

3095MFC Installation Considerations

Straight Run Requirements

TABLE 30. 3095MFCC Straight Pipe Requirements⁽¹⁾

	Beta	0.40	0.65
Upstream (inlet) side of primary	Reducer (1 line size)	2	2
	Single 90° bend or tee	2	2
	Two or more 90° bends in the same plane	2	2
	Two or more 90° bends in different plane	2	2
	Up to 10° of swirl	2	2
	Butterfly valve (75% to 100% open)	2	N/A
Downstream (outlet) side of primary		2	2

TABLE 31. 3095MFCP Straight Pipe Requirements⁽¹⁾⁽²⁾⁽³⁾

	Beta	0.40	0.65
(2)(3) Upstream (inlet) side of primary	Reducer	5	12
	Single 90° bend or tee	16	44
	Two or more 90° bends in the same plane	10	44
	Two or more 90° bends in different plane	50	60
	Expander	12	28
	Ball / Gate valve fully open	12	18
Downstream (outlet) side of primary		6	7

(1) Consult an Emerson Process Management representative if disturbance is not listed.

(2) Recommended lengths represented in pipe diameters per ISO 5167.

(3) Refer to ISO 5167 for recommended lengths when using flow straighteners.

Pipe Orientation

Pipe orientation for both 3095MFCC Compact Conditioning Mass Orifice and standard 3095MFCP Compact Mass Orifice.

Orientation/ Flow Direction	Process ⁽¹⁾		
	Gas	Liquid	Steam
Horizontal	D/R	D/R	D/R
Vertical Up	R	D/R	R
Vertical Down	D/R	NR	NR

(1) D = Direct mount acceptable (recommended)

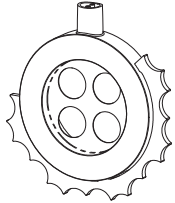
R = Remote mount acceptable

NR = Not recommended

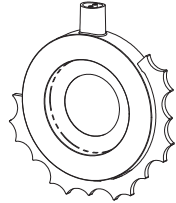
Rosemount 3095 MultiVariable

Pipe Centering

Improper centering of any orifice type device can cause an error of up to $\pm 5\%$ in small line sizes. A centering mechanism (centering ring) independent of flange rating comes standard with the 405 Compact Orifice Series.



3095MFCC
Conditioning Orifice



3095MFCP
Compact Orifice

Flowmeter Orientation

Flowmeter orientation for both 3095MFC Conditioning Compact Orifice and standard Compact Orifice.

Gas (Horizontal)	Gas (Vertical)
<p>Recommended Zone 90° 45° 45°</p>	<p>Flow 360°</p>
Liquid and Steam (Horizontal)	Steam (Vertical)
<p>Recommended Zone 30° 30° Recommended Zone 30° 45° 45°</p>	<p>Flow 360°</p>
Top Mounting for Steam (Horizontal)	
<p>Recommended Zone 90° 45° 45°</p>	

Rosemount 3095MFC Product Certifications

Rosemount 3095MFC with HART

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095M_2/3,4/D Flow Transmitters — QS Certificate of Assessment - EC No. PED-H-20
 Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller —
 Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold —
 Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095MV Flow Transmitters
 — EN 50081-1: 1992; EN 50082-2:1995;
 EN61326-1:2006; EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5 Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations and Zone 0 Exia IIC T4. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed. For input parameters and installation see control drawing 03095-1020.

Canadian Standards Association (CSA)

- E6 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. CSA enclosure Type 4X suitable for indoor and outdoor hazardous locations. Provides nonincendive RTD connection for Class I, Division 2, Groups A, B, C, and D. Factory Sealed. Install in accordance with Rosemount Drawing 03095-1024. Approved for Class I, Division 2, Groups A, B, C, and D.
- I6 Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. when installed in accordance with Rosemount drawing 03095-1021. Temperature Code T3C. For input parameters and installation see control drawing 03095-1021.

European Certifications


- I1 ATEX Intrinsic Safety
 Certificate Number: BAS98ATEX1359X  II 1 G
 Ex ia IIC T5 (T_{amb} = -45 °C to 40 °C)
 Ex ia IIC T4 (T_{amb} = -45 °C to 70 °C)
 CE 1180

TABLE 32. Connection Parameters (Power/Signal Terminals)

U _i = 30 V
I _i = 200 mA
P _i = 1.0 W
C _i = 0.012 μF
L _i = 0

TABLE 33. Temperature Sensor Connection Parameters


U _o = 30 V
I _o = 19 mA
P _o = 140 mW
C _i = 0.002 μF
L _i = 0

TABLE 34. Temp Sensor Terminals Connection Parameters

C _o = 0.066 μF	Gas Group IIC
C _o = 0.560 μF	Gas Group IIB
C _o = 1.82 μF	Gas Group IIA
L _o = 96 mH	Gas Group IIC
L _o = 365 mH	Gas Group IIB
L _o = 696 mH	Gas Group IIA
L _o /R _o = 247 μH/ohm	Gas Group IIC
L _o /R _o = 633 μH/ohm	Gas Group IIB
L _o /R _o = 633 μH/ohm	Gas Group IIA

Special Conditions for Safe Use


The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN60079-11, Clause 6.3.12 (1994). This condition must be accounted for during installation.

- N1 ATEX Type N
 Certificate Number: BAS98ATEX3360X  II 3 G
 Ex nL IIC T5 (T_{amb} = -45 °C to 40 °C)
 Ex nL IIC T4 (T_{amb} = -45 °C to 70 °C)
 U_i = 55 V
 CE
 The apparatus is designed for connection to a remote temperature sensor such as a resistance temperature detection (RTD).

Rosemount 3095 MultiVariable


Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 V insulation test required by EN60079-15, Clause 6.8.1. This condition must be accounted for during installation.

- E1 ATEX Flameproof
 Certificate Number: KEMA02ATEX2320X  II 1/2 G
 EEx d IIC T5 (-50 °C ≤ T_{amb} ≤ 80 °C)
 T6 (-50 °C ≤ T_{amb} ≤ 65 °C)
 CE 1180

Special Conditions for Safe Use (x):

The device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

- ND ATEX Dust
 Certificate Number: KEMA02ATEX2321  II 1 D
 V = 55 Vdc MAX
 I = 23 mA MAX
 IP66
 CE 1180

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

- K5 E5 and I5 combination
 K6 E6 and I6 combination
 K1 I1, N1, E1, and ND combination

Rosemount 3095MFC with Fieldbus

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095F_2/3,4/D and 3095M_2/3,4/D Flow Transmitters

— QS Certificate of Assessment - EC No. PED-H-20
 Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller

— Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold

— Sound Engineering Practice

Primary Elements, Flowmeter

— See appropriate Primary Element QIG

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095 Flow Transmitters

— EN 50081-1: 1992; EN 50082-2:1995; EN61326-1:2006;
 EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Rosemount 3095MFC Fieldbus Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5 Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

- IE FISCO for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

- K5 E5 and I5 combination

Canadian Standards Association (CSA)

- IF CSA FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

European Certifications

- IA ATEX FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

Australian Certifications

- IG IECEx FISCO Intrinsic Safety

DIMENSIONAL DRAWINGS

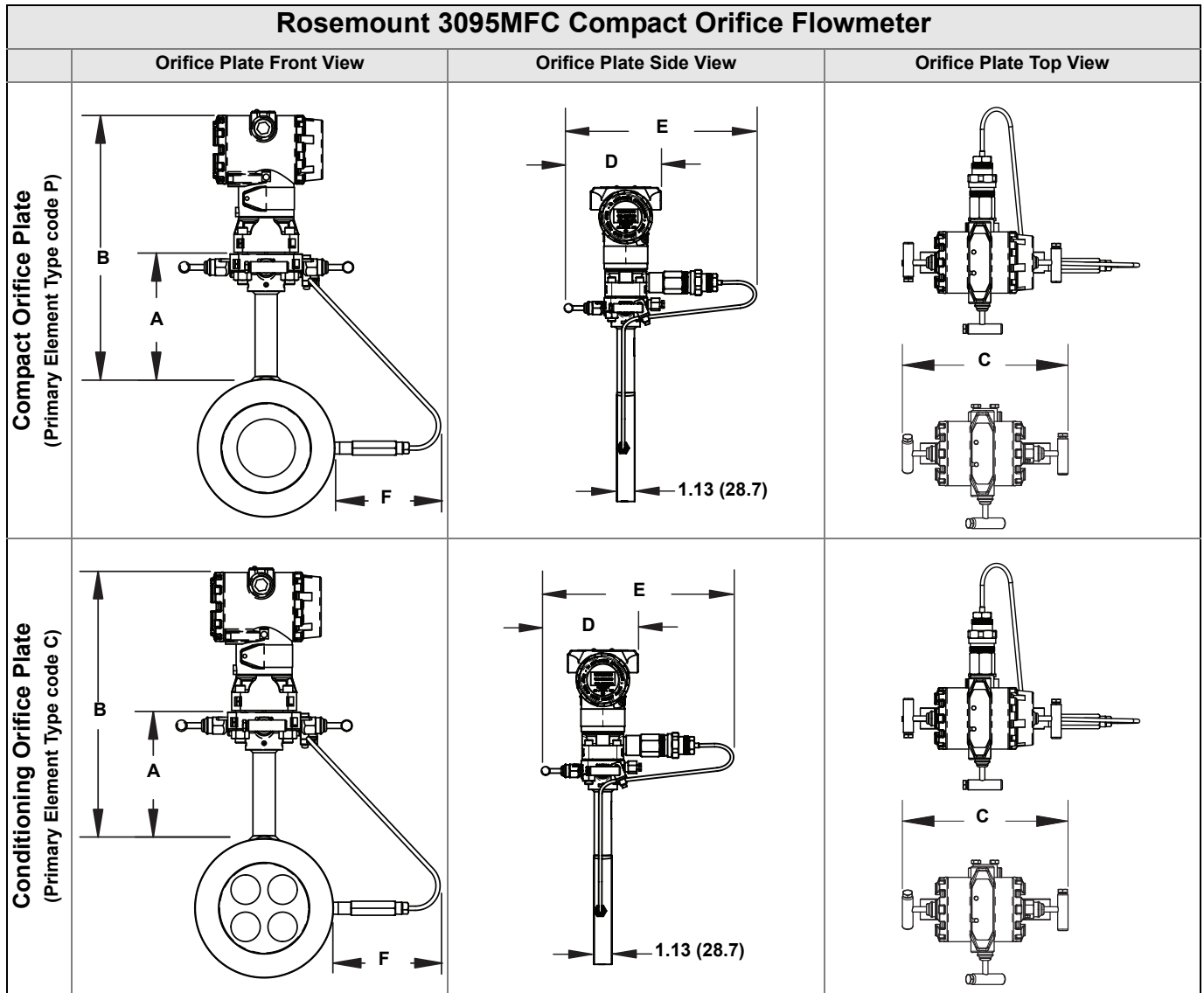


Table 35. Dimensional Drawings⁽¹⁾

Plate Type ⁽¹⁾	A	B	Transmitter Height	C	D	E	F
Type P & C	5.50 (140)	Transmitter Height + A	6.25 (159)	7.75 (197) - closed 8.25 (210) - open	6.0 (152) - closed 6.25 (159) - open	Max of 11.9 (302)	Max of 7.2 (183)

⁽¹⁾ Measurement is in inches (millimeters).

Rosemount 3095 MultiVariable

Rosemount 3095MFP Integral Orifice Flowmeter

Table 36. Rosemount 3095MFP Integral Orifice Flowmeter

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.

The Expanded offering is subject to additional delivery lead time.

Model	Product Description	
3095MFP	Integral Orifice Flowmeter	
Body Material		
Standard		Standard
S	316 SST	★
Line Size/Schedule		
Standard		Standard
005	1/2-in. (15 mm)	★
010	1-in. (25 mm)	★
015	1 1/2-in. (40 mm)	★
Process Connection		
Standard		Standard
T1	NPT Female Body (not available with thermowell and RTD, requires Temperature Sensor Code N)	★
S1 ⁽¹⁾	Socket Weld Body (not available with thermowell and RTD, requires Temperature Sensor Code N)	★
P1	Pipe Ends: NPT threaded	★
P2	Pipe Ends: Beveled	★
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, ANSI Class 150, weld-neck	★
W3	Pipe Ends: Flanged, RF, ANSI Class 300, weld-neck	★
W6	Pipe Ends: Flanged, RF, ANSI Class 600, weld-neck	★
Expanded		
A1	Pipe Ends: Flanged, RF, ANSI Class 150, slip-on	
A3	Pipe Ends: Flanged, RF, ANSI Class 300, slip-on	
A6	Pipe Ends: Flanged, RF, ANSI Class 600, slip-on	
R1	Pipe Ends: Flanged, RTJ, ANSI Class 150, slip-on	
R3	Pipe Ends: Flanged, RTJ, ANSI Class 300, slip-on	
R6	Pipe Ends: Flanged, RTJ, ANSI Class 600, slip-on	
P9	Special Process Connection	
Orifice Plate Material		
Standard		Standard
S	316 SST	★
Expanded		
H	Alloy C-276	
M	Alloy 400	
Bore Size Option		
Standard		Standard
0066	0.066-in. (1,68 mm) for 1/2-in. pipe	★
0109	0.109-in. (2,77 mm) for 1/2-in. pipe	★
0160 ⁽²⁾	0.160-in. (4,06 mm) for 1/2-in. pipe	★
0196 ⁽²⁾	0.196-in. (4,98 mm) for 1/2-in. pipe	★
0260 ⁽²⁾	0.260-in. (6,60 mm) for 1/2-in. pipe	★
0340 ⁽²⁾	0.340-in. (8,64 mm) for 1/2-in. pipe	★
0150	0.150-in. (3,81 mm) for 1-in. pipe	★
0250 ⁽²⁾	0.250-in. (6,35 mm) for 1-in. pipe	★
0345 ⁽²⁾	0.345-in. (8,76 mm) for 1-in. pipe	★
0500 ⁽²⁾	0.500-in. (12,70 mm) for 1-in. pipe	★
0630 ⁽²⁾	0.630-in. (16,00 mm) for 1-in. pipe	★
0800	0.800-in. (20,32 mm) for 1-in. pipe	★

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Rosemount 3095 MultiVariable

Table 36. Rosemount 3095MFP Integral Orifice Flowmeter

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

0295	0.295-in. (7,49 mm) for 1 1/2-in. pipe		★
0376 ⁽²⁾	0.376-in. (9,55 mm) for 1 1/2-in. pipe		★
0512 ⁽²⁾	0.512-in. (13,00 mm) for 1 1/2-in. pipe		★
0748 ⁽²⁾	0.748-in. (19,00 mm) for 1 1/2-in. pipe		★
1022	1.022-in. (25,96 mm) for 1 1/2-in. pipe		★
1184	1.184-in. (30,07 mm) for 1 1/2-in. pipe		★
Expanded			
0010	0.010-in. (0,25 mm) for 1/2-in. pipe		
0014	0.014-in. (0,36 mm) for 1/2-in. pipe		
0020	0.020-in. (0,51 mm) for 1/2-in. pipe		
0034	0.034-in. (0,86 mm) for 1/2-in. pipe		
Transmitter Connection Platform			
Standard			Standard
D3	Direct-mount, 3-valve manifold, SST		★
D5	Direct-mount, 5-valve manifold, SST		★
R3	Remote-mount, 3-valve manifold, SST		★
R5	Remote-mount, 5-valve manifold, SST		★
Expanded			
D4	Direct-mount, 3-valve manifold, Alloy C-276		
D6	Direct-mount, 5-valve manifold, Alloy C-276		
D7	Direct-mount, High Temperature, 5-valve manifold, SST		
R4	Remote-mount, 3-valve manifold, Alloy C-276		
R6	Remote-mount, 5-valve manifold, Alloy C-276		
Differential Pressure Range			
Standard			Standard
1	0 to 25 in H ₂ O (0 to 62,3 mbar)		★
2	0 to 250 in H ₂ O (0 to 623 mbar)		★
3	0 to 1000 in H ₂ O (0 to 2,5 bar)		★
Static Pressure Range			
Standard			Standard
B	0 – 8 to 0 – 800 psia (0 –55,16 to 0 – 5515,8 kPa)		★
C	0 – 8 to 0 – 800 psig (0 –55,16 to 0 – 5515,8 kPa)		★
D	0 – 36.2 to 0 – 3626 psia (0 –250 to 0 – 25000 kPa)		★
E	0 – 36.2 to 0 – 3626 psig (0 –250 to 0 – 25000 kPa)		★
Output Protocol			
Standard			Standard
A	4–20 mA with digital signal based on HART protocol		★
V	FOUNDATION fieldbus protocol		★
Transmitter Housing Style		Conduit Entry Size	
Standard			Standard
1A	Polyurethane-covered aluminum	1/2-14 NPT	★
1B	Polyurethane-covered aluminum	M20 x 1.5 (CM20)	★
1J	SST	1/2-14 NPT	★
1K	SST	M20 x 1.5 (CM20)	★
Expanded			
1C	Polyurethane-covered aluminum	G 1/2	
1L	SST	G 1/2	

Options (Include with selected model number)

Performance Class			
Standard			Standard
U3 ⁽³⁾	Ultra for Flow: up to ±0.95% mass flow rate accuracy, up to 10:1 turndown, 10-year stability, limited 12-year warranty		★

Rosemount 3095 MultiVariable

Table 36. Rosemount 3095MFP Integral Orifice Flowmeter

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Transmitter / Body Bolt Material		
Expanded		
G	High temperature (850 °F (454 °C))	
Temperature Sensor⁽⁴⁾		
Expanded		
N	No thermowell, Cable and RTD	
Optional Bore Calculation		
Standard		Standard
BC	Bore Calculation	★
Optional Connection		
Standard		Standard
G1	DIN 19231 Transmitter Connection	★
Pressure Testing		
Expanded		
P1 ⁽⁵⁾	Hydrostatic Testing with Certificate	
Special Cleaning		
Expanded		
P2	Cleaning for Special Processes	
PA	Cleaning per ASTM G93 Level D (section 11.4)	
Material Testing		
Expanded		
V1	Dye Penetrant Exam	
Material Examination		
Expanded		
V2	Radiographic Examination (available only with Process Connection codes W1, W3, and W6)	
Flow Calibration		
Expanded		
WD ⁽⁶⁾	Flow Rate Calibration	
WZ ⁽⁶⁾	Special Calibration	
Special Inspection		
Standard		Standard
QC1	Visual & Dimensional Inspection with Certificate	★
QC7	Inspection & Performance Certificate	★
Material Traceability Certification		
Standard		Standard
Q8 ⁽⁷⁾	Material certification per EN 10204:2004 3.1	★
Code Conformance		
Expanded		
J2 ⁽⁸⁾	ANSI / ASME B31.1	
J3 ⁽⁸⁾	ANSI / ASME B31.3	
Materials Conformance		
Expanded		
J5 ⁽⁹⁾	NACE MR-0175 / ISO 15156	
Country Certification		
Standard		Standard
J6	European Pressure Directive (PED)	★
Expanded		
J1	Canadian Registration	
Transmitter Calibration Certificate		
Standard		Standard
Q4	Calibration Data Certificate for Transmitter	★
Product Certifications		
Standard		Standard
E5	FM Explosion-proof	★
I5	FM Intrinsic Safety and Non-Incendive	★

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Rosemount 3095 MultiVariable

Table 36. Rosemount 3095MFP Integral Orifice Flowmeter

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

K5	FM Explosion Proof, Intrinsic Safety, and Non-Incendive (combination of E5 and I5)	★
E6	CSA Explosion Proof	★
I6	CSA Intrinsically Safe, Division 2	★
K6	CSA Explosion Proof, Intrinsically Safe, Division 2	★
I1	ATEX Intrinsic Safety	★
E1	ATEX Flameproof	★
N1	ATEX Type n	★
ND	ATEX Combustible Dust	★
K1	ATEX Flameproof, Intrinsic Safety, Type n	★
I7	IECEX Intrinsically Safe	★
Alternative Transmitter Material of Construction		
Standard		Standard
L1	Inert Sensor Fill Fluid (not available with Static Pressure range codes B and D)	★
Digital Display		
Standard		Standard
M5	Integral mount LCD display	★
Terminal Blocks		
Standard		Standard
T1	Transient Protection	★
Typical Model Number: 3095MFP S 010 A3 S 0150 D3 1 C A 1A		

- (1) To improve pipe perpendicularity for gasket sealing, socket diameter is smaller than standard pipe O.D.
- (2) Best flow coefficient uncertainty is between $(0.2 < \beta < 0.6)$.
- (3) Ultra for Flow applicable for HART protocol, DP ranges 2 and 3 with SST isolator material and silicone fill fluid options only.
- (4) Rosemount 3095MFP is supplied with an integral temperature sensor as standard. Thermowell material is the same as the body material.
- (5) Does not apply to Process Connection codes T1 and S1.
- (6) Not available for bore sizes 0010, 0014, 0020, or 0034.
- (7) Includes certificates for mechanical and chemical properties of bodies, orifice plates, pipes, flanges, and adapters as applicable.
- (8) Not available with DIN Process Connection codes D1, D2, or D3.
- (9) Materials of Construction comply with metallurgical requirements within NACE MR0175/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.

Rosemount 3095 MultiVariable

Rosemount 3095MFP Specifications

3095MFP Performance Specifications

System Reference Accuracy

Percentage (%) of mass flow rate⁽¹⁾

Beta (β) ⁽²⁾	Classic (8:1 flow turndown)	Ultra for Flow (10:1 flow turndown)
$\beta < 0.1$	$\pm 2.70\%$	$\pm 2.65\%$
$0.1 < \beta < 0.2$	$\pm 1.80\%$	$\pm 1.45\%$
$0.2 < \beta < 0.6$	$\pm 1.50\%$	$\pm 1.05\%$
$0.6 < \beta < 0.8$	$\pm 2.00\%$	$\pm 1.70\%$

(1) Without associated straight run piping, discharge coefficient uncertainty can add up to 1.5% - 5% additional error. Consult the factory for additional information.

(2) $\beta = \frac{\text{Orifice Plate Bore}}{\text{body I.D.}}$

Repeatability

 $\pm 0.1\%$

Line Sizes

- 1/2-in. (15 mm)
- 1-in. (25 mm)
- 1 1/2-in. (40 mm)

Output

Two-wire 4–20 mA, user-selectable for DP, AP, GP, PT, mass flow, or totalized flow. Digital HART protocol superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol.

Performance Statement Assumptions

- Measured pipe I.D
- Electronics are trimmed for optimum flow accuracy

Sizing

Contact an Emerson Process Management sales representative for assistance. A "Configuration Data Sheet" is required prior to order for application verification.

3095MFP Functional Specifications

Service

- Liquid
- Gas
- Steam

Power Supply

4–20 mA option

- External power supply required. Standard transmitter (4–20 mA) operates on 11 to 55 Vdc with no load

Process Temperature Limits

Direct Mount Transmitter

- –40 to 450 °F (–40 to 232 °C)

Remote Mount Transmitter

- –148 to 850 °F (–100 to 454 °C)⁽¹⁾

(1) High temperature option code G must be selected.

Transmitter Temperature Limits

Ambient

- –40 to 185 °F (–40 to 85 °C)
- With Integral Mount LCD Display: –4 to 175 °F (–20 to 80 °C)

Storage

- –50 to 230 °F (–46 to 110 °C)
- With Integral Mount LCD Display: –40 to 185 °F (–40 to 85 °C)

Maximum Working Pressure

Transmitter

- Zero to two times the absolute pressure range with a maximum of 3626 psia (250 bar).

Flowmeter

- Pressure retention per ANSI B16.5 600 lb. or DIN PN100

TABLE 37. 1195 Pressure Limits

Line Size	Process Connection Code	Maximum Working Pressure @ 100 °F ⁽¹⁾⁽²⁾
1/2-in. (12.7 mm)	S1 or P2	3000 psig (207 bar)
	T1 or P1	1500 psig (103 bar)
1-in. (25.4 mm)	S1 or P2	2000 psig (138 bar)
	T1 or P1	1500 psig (103 bar)
1 1/2-in. (38.1 mm)	S1 or P2	1500 psig (103 bar)
	T1 or P1	1500 psig (103 bar)
All	Flanged	Meets flange primary pressure rating per ANSI B16.5 (EN-1092-1 for DIN flanges)

(1) For pressure ratings at temperatures less than –20 °F (–29 °C) or above 100 °F (38 °C) consult an Emerson Process Management representative.

(2) Transmitter static pressure range may limit maximum working pressure. Refer to Static Pressure Ranges specification.

Static Pressure Limits

Operates within specification between static pressures of 0.5 psia (0.03 bar-A) and the URL of the static pressure sensor.

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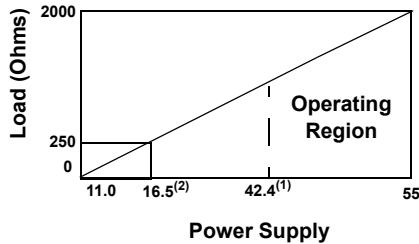
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Rosemount 3095 MultiVariable

Load Limitations

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

$$\text{Maximum Loop Resistance} = \frac{\text{Power Supply} - 11.0}{0.022}$$



(1) For CSA approval, power supply must not exceed 42.4 Vdc.

(2) HART protocol communication requires a loop resistance value between 250-1100 ohms, inclusive.

Humidity Limits

- 0–100% relative humidity

Turn-On Time

Digital and analog measured variables will be within specification 7 – 10 seconds after power is applied to the transmitter.

Digital and analog flow output will be within specifications 10 – 14 seconds after power is applied to the transmitter.

Damping

Analog output response to a step input change is user-selectable from 0 to 29 seconds for one time constant. This software damping is in addition to sensor module response time

Failure Mode Alarm

Output Code A

If self-diagnostics detect a non-recoverable transmitter failure, the analog signal will be driven either below 3.75 mA or above 21.75 mA to alert the user. High or low alarm signal is user-selectable by internal jumper pins.

Output Code V

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable(s).

Configuration

475 Field Communicator

- Performs traditional transmitter maintenance functions

3095 Multivariable Engineering Assistant (EA) software package

- Contains built-in physical property database
- Enables mass flow configuration, maintenance, and diagnostic functions via HART modem (output option code A)
Enables mass flow configuration via PCMCIA Interface for FOUNDATION fieldbus (output option code V)

Physical Properties Database

- Maintained in Engineering Assistant Software Configurator
- Physical properties for over 110 fluids
- Natural gas per AGA
- Steam and water per ASME
- Other database fluids per American Institute of Chemical Engineers (AIChE)
- Optional custom entry

FOUNDATION fieldbus Function Blocks

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.

5 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.

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.

Rosemount 3095 MultiVariable

3095MFP Physical Specifications

Temperature Measurement

Remote RTD

- 100 Ohm platinum with 1/2-in. NPT nipple and union (078 series with Rosemount 644 housing)
- Standard RTD cable is shielded armored cable, length is 12 feet (3.66 m)
- Remote RTD material is SST

Thermowell

- 1/2-in. x 1/2-in. NPT, 316 SST

Electrical Considerations

1/2–14 NPT, G1/2, and CM20 conduit. HART interface connections permanently fixed to terminal block

Material of Construction

Orifice Plate

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

Body

- 316 SST (CF8M), material per ASTM A351
- Alloy C-276 (CW12MW), material per ASTM A494

Flange and Pipe Material (If Applicable)

- A312 Gr 316/316L, B622 UNS N10276
- 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
- SAE J429 Gr 8 bolts (meets or exceeds ASTM A193 B7 requirements) for body bolt/stud material option code G for high temperatures.

Transmitter Connection Studs

- ASTM A193 Gr B8M studs

Gaskets/O-rings

- Glass filled PTFE
- Optional high temperature Inconel® X-750
- Gaskets and o-rings must be replaced each time the 3095MFP is disassembled for installation or maintenance.

Orifice Type

Square edged—orifice bore size

- 0.066-in and larger

Quadrant edged—orifice bore size (for 1/2-in. line size only)

- 0.034-in
- 0.020-in
- 0.014-in
- 0.010-in

NOTE

Integral Orifice bodies contain corner tapped pressure ports.

Pipe Lengths

- Upstream and downstream associated piping sections are available on the 1195. The table below lists the standard overall length (lay length) as a function of end connections and line size.

Flanged Process Connection ^{(1) (2) (3)}	Line Size		
	1/2-in. (15 mm)	1-in. (25 mm)	1 1/2-in. (40 mm)
RF, ANSI Class 150, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, ANSI Class 300, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, ANSI Class 600, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, DIN PN16, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, DIN PN40, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, DIN PN100, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RF, ANSI Class 150, weld-neck	21.8 (554)	33.2 (843)	44.9 (1140)
RF, ANSI Class 300, weld-neck	22.2 (564)	33.7 (856)	45.5 (1156)
RF, ANSI Class 600, weld-neck	22.8 (579)	34.3 (871)	46.1 (1171)
RTJ, ANSI Class 150, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RTJ, ANSI Class 300, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
RTJ, ANSI Class 600, slip-on	18.2 (463)	28.9 (734)	40.3 (1023)
NPT / Beveled Process Connection⁽¹⁾⁽²⁾⁽³⁾	18 (457)	28.9 (734)	40.3 (1023)

(1) See the ordering information for model code description.

(2) Consult factory for other lengths.

(3) See page 58 for additional information on associated pipe lengths.

Weight

The following weights are approximate

Line Size	With Body		With Flanged Piping ⁽¹⁾	
	lb	kg	lb	kg
1/2-in. (15 mm)	16.1	7.3	20.1	9.1
1-in. (25 mm)	18.1	8.2	24.1	10.9
1 1/2-in. (40 mm)	20.1	9.1	37.1	16.8

(1) As supplied with standard lengths, ANSI Class 150 flanges.

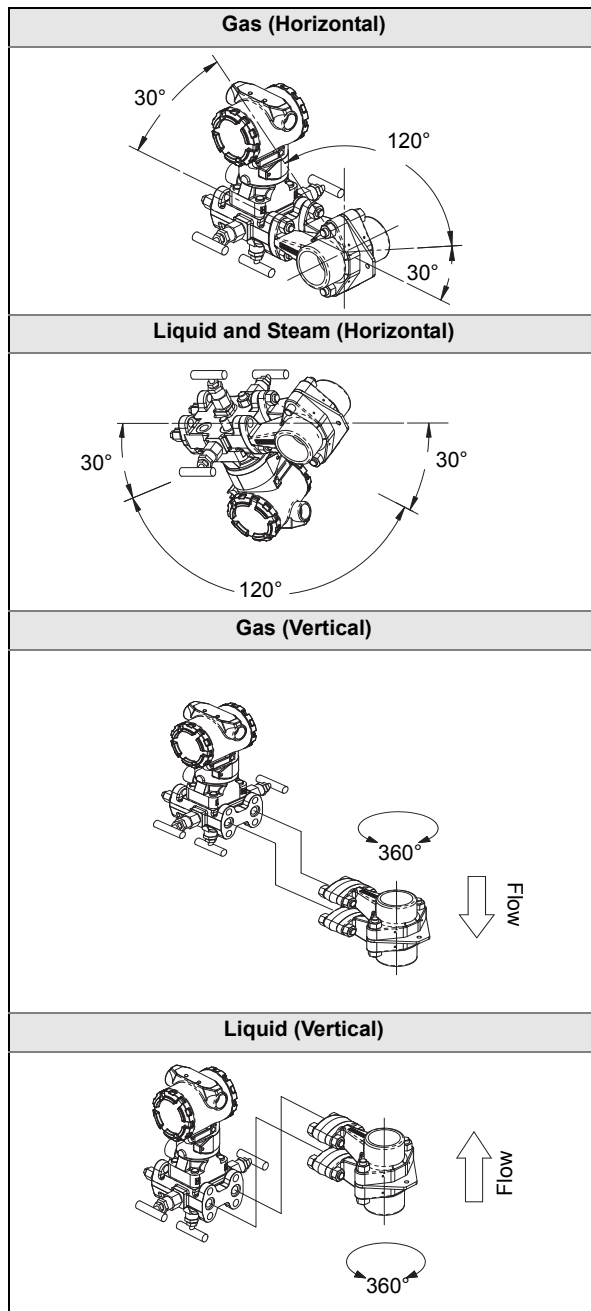
3095MFP Installation Considerations

Pipe Orientation

Orientation/ Flow Direction	Process ⁽¹⁾		
	Gas	Liquid	Steam
Horizontal	D/R	D/R	D/R
Vertical Up	R	R	R
Vertical Down	R	NR	NR

(1) *D = Direct mount acceptable (recommended)*
R = Remote mount acceptable
NR = Not recommended

Flowmeter Orientation



Process-Wetted Parts

Manifolds

- 316 SST
- Alloy C-276

Manifold Option	Type	Type with J2, J3 Option
Direct Mount: D3-D6	Traditional	Traditional
Direct Mount: D7	Traditional	N/A
Remote Mount: R3-R6	Coplanar	Traditional

Transmitter Vent Valves and Process Flanges

- 316 SST
- Alloy C-276

Process Isolating Diaphragms

- 316L SST
- Alloy C-276

O-rings

- Glass-filled PTFE / Inconel X-750

Integral Manifold O-Rings

- PTFE / Graphite (D7)

Non-Wetted Parts

Electronics Housing

Low-copper aluminum alloy or SST: CF-3M (Cast 316L SST) 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

Coplanar Sensor Module Housing

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

Sensor Module Fill Fluid

Silicone or inert halocarbon (Inert is not available with 3051S_CA). In-Line series uses Fluorinert[®] FC-43.

Remote Mounting Brackets

SST

Sensor mounting (including nuts, bolts, and gasket)

SST (CS optional for high temperature)

Bolts

CS

Paint

Polyurethane

Cover O-rings

Buna-N

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

Rosemount 3095 MultiVariable

Rosemount 3095MFP Product Certifications

Rosemount 3095MFP with HART

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095M_2/3,4/D Flow Transmitters — QS Certificate of Assessment - EC No. PED-H-20
Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller —
Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold —
Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095MV Flow Transmitters

— EN 50081-1: 1992; EN 50082-2:1995;
EN61326-1:2006; EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5 Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.
For input parameters and installation see control drawing 03095-1020.

Canadian Standards Association (CSA)

- E6 Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. CSA enclosure Type 4X suitable for indoor and outdoor hazardous locations. Provides nonincendive RTD connection for Class I, Division 2, Groups A, B, C, and D. Factory Sealed. Install in accordance with Rosemount Drawing 03095-1024. Approved for Class I, Division 2, Groups A, B, C, and D.
- I6 Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D. when installed in accordance with Rosemount drawing 03095-1021. Temperature Code T3C.
For input parameters and installation see control drawing 03095-1021.

European Certifications


- I1 ATEX Intrinsic Safety
Certificate Number: BAS98ATEX1359X  II 1 G
EEx ia IIC T5 (T_{amb} = -45 °C to 40 °C)
EEx ia IIC T4 (T_{amb} = -45 °C to 70 °C)
CE 1180

TABLE 38. Connection Parameters (Power/Signal Terminals)

U _i = 30 V
I _i = 200 mA
P _i = 1.0 W
C _i = 0.012 μF
L _i = 0

TABLE 39. Temperature Sensor Connection Parameters


U _o = 30 V
I _o = 19 mA
P _o = 140 mW
C _i = 0.002 μF
L _i = 0

TABLE 40. Temp Sensor Terminals Connection Parameters

C _o = 0.066 μF	Gas Group IIC
C _o = 0.560 μF	Gas Group IIB
C _o = 1.82 μF	Gas Group IIA
L _o = 96 mH	Gas Group IIC
L _o = 365 mH	Gas Group IIB
L _o = 696 mH	Gas Group IIA
L _o /R _o = 247 μH/ohm	Gas Group IIC
L _o /R _o = 633 μH/ohm	Gas Group IIB
L _o /R _o = 633 μH/ohm	Gas Group IIA

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), is not capable of withstanding the 500 V insulation test required by EN50 020, Clause 6.4.12 (1994). This condition must be accounted for during installation.

- N1 ATEX Type N
Certificate Number: BAS98ATEX3360X  II 3 G
EEx nL IIC T5 (T_{amb} = -45 °C to 40 °C)
EEx nL IIC T4 (T_{amb} = -45 °C to 70 °C)
U_i = 55 V

CE

The apparatus is designed for connection to a remote temperature sensor such as a resistance temperature detection (RTD).

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Rosemount 3095 MultiVariable

Special Conditions for Safe Use

The 3095, when fitted with the transient terminal block (order code B), are not capable of withstanding the 500 volts insulation test required by EN50 021, Clause 9.1 (1995). This condition must be accounted for during installation.

E1 ATEX Flameproof


Certificate Number: KEMA02ATEX2320X  II 1/2 G
EEx d IIC T5 (-50 °C ≤ T_{amb} ≤ 80 °C)
T6 (-50 °C ≤ T_{amb} ≤ 65 °C)

CE 1180

Special Conditions for Safe Use (x):

The device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

ND ATEX Dust

Certificate Number: KEMA02ATEX2321  II 1 D
V = 55 Vdc MAX
I = 23 mA MAX
IP66
CE 1180

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

K5 E5 and I5 combination

K6 E6 and I6 combination

K1 I1, N1, E1, and ND combination

Rosemount 3095MFP with Fieldbus

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

3095F_2/3,4/D and 3095M_2/3,4/D Flow Transmitters

— QS Certificate of Assessment - EC No. PED-H-20

Module H Conformity Assessment

All other 3095_ Transmitters/Level Controller

— Sound Engineering Practice

Transmitter Attachments: Process Flange - Manifold

— Sound Engineering Practice

Primary Elements, Flowmeter

— See appropriate Primary Element QIG

Electro Magnetic Compatibility (EMC) (89/336/EEC)

3095 Flow Transmitters

— EN 50081-1: 1992; EN 50082-2:1995; EN61326-1:2006;
EN61326-2-3:2006

Ordinary Location Certification for Factory Mutual

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Rosemount 3095MFP Fieldbus Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5** Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II/Class III, Division 1, Groups E, F, and G. Enclosure type NEMA 4X. Factory Sealed. Provides nonincendive RTD connections for Class I, Division 2, Groups A, B, C, and D.
- I5** Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Non-incendive for Class I, Division 2, Groups A, B, C, and D. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

- IE** FISCO for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G hazardous outdoor locations. Temperature Code T4. Factory Sealed.

For input parameters and installation see control drawing 03095-1020.

Combinations of Certifications

SST certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

K5 E5 and I5 combination

Canadian Standards Association (CSA)

- IF** CSA FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

European Certifications

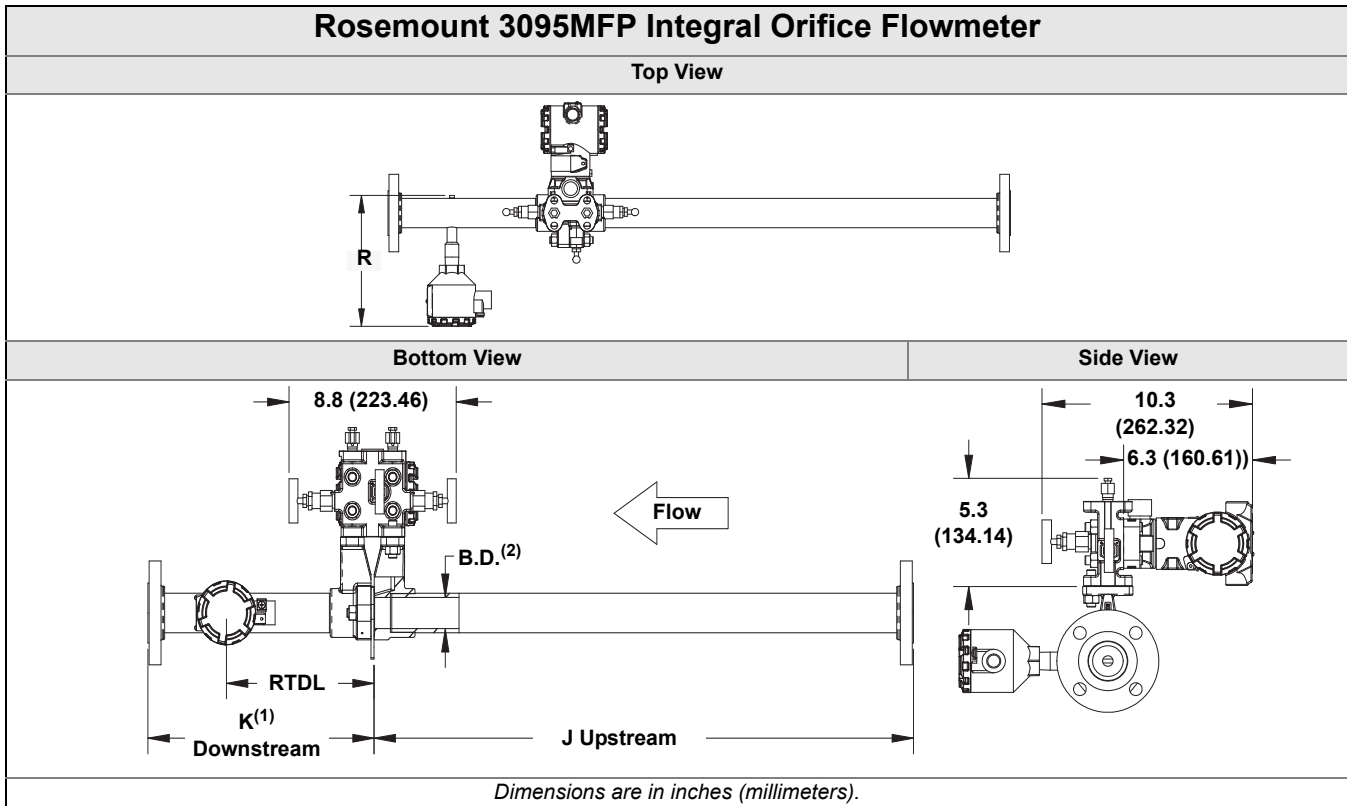
- IA** ATEX FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only

Australian Certifications

- IG** IECEx FISCO Intrinsic Safety

Rosemount 3095 MultiVariable

DIMENSIONAL DRAWINGS



Dimension	Line Size					
	1/2-in. (12.7 mm)		1-in. (25.4 mm)		1 1/2-in. (38.1 mm)	
J (RF slip-on, RTJ slip-on, RF-DIN slip-on)	12.5-in.	318 mm	20.2-in.	513 mm	28.4-in.	721 mm
J (RF 150#, weld-neck)	14.3-in.	363 mm	22.3-in.	566 mm	30.7-in.	780 mm
J (RF 300#, weld-neck)	14.5-in.	368 mm	22.6-in.	574 mm	31.0-in.	787 mm
J (RF 600#, weld-neck)	14.8-in.	376 mm	22.9-in.	582 mm	31.3-in.	795 mm
K ((RF slip-on, RTJ slip-on, RF-DIN slip-on) ⁽¹⁾	5.7-in.	145 mm	8.7-in.	221 mm	11.9-in.	302 mm
K (RF 150#, weld-neck)	7.5-in.	191 mm	10.9-in.	277 mm	14.2-in.	361 mm
K (RF 300#, weld-neck)	7.7-in.	196 mm	11.1-in.	282 mm	14.5-in.	368 mm
K (RF 600#, weld-neck)	8.0-in.	203 mm	11.4-in.	290 mm	14.8-in.	376 mm
B.D. ⁽²⁾	0.664-in.	16.86 mm	1.097-in.	27.86 mm	1.567-in.	39.80 mm
RTDL	3.11-in.	78.9 mm	5.25-in.	133.4 mm	7.50-in.	190.5 mm
R	7.4-in.	187.96 mm	7.8-in.	198.12 mm	8.4-in.	213.36 mm

(1) Downstream length shown here includes plate thickness of 0.162-in. (4.11 mm).

(2) B.D. is diameter of the precision bored portion of the upstream and downstream piping.

Standard Terms and Conditions of Sale can be found at www.rosemount.com/terms_of_sale

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