# Rosemount® 3051S MultiVariable™ Configuration Data Sheet

**BOLD** = Required Value
★ = Default

○ Select only one of the items provided
❑ One or more of the listed items can be selected

## Customer information

Customer: _____

Contact Name: _____

Phone No: _____

Fax No./Email: _____

P.O./Reference No.: _____

P.O. Line Item: _____

Model No.: _____

Customer Signoff: _____

## Tagging

Hardware Tag:   ○ Wire-On _____ (85 characters, A-Z, 0-9)

○ Nameplate _____ (120 characters, A-Z, 0-9)

Software Tag:   _____ (8 digits, A-Z, 0-9)

| Measurement type | Process measurements |
|---|---|
| 1 | Differential Pressure/Static Pressure/Process Temperature |
| 2 | Differential Pressure/Static Pressure |
| 3 | Differential Pressure/Process Temperature |
| 4 | Differential Pressure |
| 5 and 6 | Static Pressure/Process Temperature |

Based on the measurement type of the transmitter, complete only the necessary process measurements listed in the table above. For example, for measurement type 2 only fill out the Differential Pressure and Static Pressure Units, LTV, and UTV.

## Transmitter sensor calibration of the lower trim value (LTV) and upper trim value (UTV)

Differential Pressure:   Units = _____   LTV = _____ (0★)   UTV =_____ Upper Sensor Limit★

Static Pressure[1]:   Units = _____   LTV = _____ (0★)   UTV =_____ Upper Sensor Limit★

Process Temperature:   Units =_____   LTV = _____   UTV =_____

1.  For Measurement Type 5 with "Gage" Static Pressure Type, sensor calibration must be specified as "Differential Pressure". Static pressure calibration must not be specified.

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| Configuration defaults for 3051S MultiVariable and 3051SF Flowmeters[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Compensated mass and energy flow measurement** | | | | **Direct process variable measurement** | | | | | |
| Flowmeter Type: | 3051SF_1 | 3051SF_2 | 3051SF_3 | 3051SF_4 | 3051SF_5 | 3051SF_6 | 3051SF_7 | 3051SF_D | N/A | N/A |
| Transmitter Type: | 3051SMV_M1 | 3051SMV_M2 | 3051SMV_M3 | 3051SMV_M4 | 3051SMV_P1 | 3051SMV_P2 | 3051SMV_P3 | 3051S_CD | 3051SMV_P5 | 3051SMV_P6 |
| 4 mA: | 0 | | | | 0 | | | | 0 | |
| 20 mA: | Requires C2 option or onsite configuration | | | | URL of DP Sensor or DP Trim Value (UTV) entered above | | | | URL of SP Sensor or SP Trim Value (UTV) entered above | |
| Variable Mapping: PV | Flow Rate | Flow Rate | Flow Rate | Flow Rate | DP | DP | DP | DP | SP[2] | SP[2] |
| 2V: | DP | DP | DP | DP | SP | SP | PT | ST | PT | PT |
| 3V: | SP | SP | PT | ST | PT | ST | ST | N/A | N/A | N/A |
| 4V: | PT | ST | ST | N/A | ST | N/A | N/A | N/A | N/A | N/A |
| Temperature Configuration[3]: | Lower Sensor Limit = -328 °F (-200 °C) Upper Sensor Limit = 1562 °F (850 °C) Mode = Normal | | | | Lower Sensor Limit = -328 °F (-200 °C) Upper Sensor Limit = 1562 °F (850 °C) Mode = Normal | | | | | |
| Digital Display: | Alternating: PV, 2V, 3V, 4V | | | | Alternating: PV, 2V, 3V, 4V | | | | | |
| Burst Mode: | Off | | | | Off | | | | | |
| Security: | Off | | | | Off | | | | | |
| Alarm: | High | | | | High | | | | | |
| Atmospheric Pressure[3]: | 14.696 psia | | | | 14.696 psia | | | | | |
| Low Flow Cutoff[3]: | 0.05 inH$_2$O | | | | N/A | | | | | |
| Totalizer[3]: | Off | | | | Off | | | | | |
| SP = Static Pressure (Gage or Absolute), DP = Differential Pressure, ST = Sensor Module Temperature, PT = Process Temperature, N/A = Not Applicable | | | | | | | | | | |

1. A C1 or C2 option is required if settings other than defaults are desired. For Mass Flow Transmitters with a C2 option and DP Flowmeters, a DP Flow Configuration Data Sheet (document number 00806-0100-4010) is also required.
2. For Measurement Type 5 with "Gage" Static Pressure Type, sensor calibration must be specified as "Differential Pressure". Static pressure calibration must not be specified.
3. A C2 option is required if settings other than defaults are desired.

# C1 or C2 option configuration information

**Note**
The following fields are optional and apply for a C1 or C2 option.

| Transmitter information |
|---|
| Descriptor: _____ (16 characters, A-Z, 0-9) |
| Message: _____ (32 characters, A-Z, 0-9) |
| Long Tag: _____ (32 characters) |
| Date: _____ Date of Calibration★ |

### Variable mapping (assign each variable by selecting one choice per row)

| | Mass or Volumetric Flow[1] | Energy Flow[1] | Differential Pressure | Absolute Pressure | Gage Pressure[2] | Process Temperature | Totalizer[1] | Sensor Module Temperature |
|---|---|---|---|---|---|---|---|---|
| PV: | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | N/A |
| 2V: | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| 3V: | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| 4V: | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

1. Only available for Mass and Energy Flow Transmitters - MultiVariable Type: M on 3051S MultiVariable Transmitter, Output Types: 1-4 on 3051SF Flowmeters.
2. For Measurement Type 5 with "Gage" Static Pressure Type, pressure variables must be mapped as "Differential Pressure". Gage Pressure must not be selected.

### Temperature sensor matching

◯ Pt 100 α= 0.00385 RTD per IEC 751★      ◯ Sensor Matching α, β, δ      ◯ Sensor Matching A, B, C

Fill in Callendar - Van Dusen constants below for Sensor Matching α, β, δ or A, B, C.

Callendar - Van Dusen constants:      $R_0$: _____      A/α:_____

                                                 B/β: _____      C/δ: _____

### Digital display information

☐ Differential Pressure      ☐ Gage Pressure [1]      ☐ Absolute Pressure      ☐ Process Temperature      ☐ % of Range

☐ Flow Rate[2]      ☐ Energy Rate[2]      ☐ Totalizer[2]      ☐ Sensor Module Temperature

1. For Measurement Type 5 with "Gage" Static Pressure Type, pressure must be digitally displayed as "Differential Pressure". Gage Pressure must not be selected.
2. Only available for Mass and Energy Flow Transmitters - MultiVariable Type: M on 3051S MultiVariable Transmitter, Output Types: 1-4 on 3051SF Flowmeters.

### Variable damping (0 - 60 seconds)

Differential Pressure: _____ (0.40 sec.★)    Static Pressure[1]: _____ (0.40 sec.★)    Process Temperature: _____ (5.00 sec.★)

Mass or Volumetric Flow[2]: _____ (0.40 sec.★)    Energy Flow[2]: _____ (0.40 sec.★)

1. For Measurement Type 5 with "Gage" Static Pressure Type, pressure variable damping must be specified as "Differential Pressure". Static Pressure damping must not be specified.
2. Only available for Mass and Energy Flow Transmitters - MultiVariable Type: M on 3051S MultiVariable Transmitter, Output Types: 1-4 on 3051SF Flowmeters.

### Signal selection

◯ 4–20 mA with simultaneous digital signal based on HART® protocol★ (Default HART address: 0)

     ☐ Turn on Burst mode for 333 Tri-Loop™ (HART command 3)

◯ Multidrop Communication      Transmitter Address (1-15): _____ (1★)

### Hardware configuration[1]

Security:    ◯ Off ★      ◯ On

1. Only available for Mass and Energy Flow Transmitters - MultiVariable Type: M on 3051S MultiVariable Transmitter, Output Types: 1-4 on 3051SF Flowmeters.

| Alarm and saturation signal levels (choose one of the following) | | |
|---|---|---|
| **Standard** | **NAMUR** | **Custom (fill in all four spaces below for either Custom High or Custom Low alarm)** |
| ◯ High★ <br><br> ◯ Low (Requires C8 option) <br><br> High Alarm = 21.75 mA <br><br> High Saturation = 20.80 mA <br><br><br> Low Alarm = 3.75 mA | ◯ High (Requires C4 option) <br><br> ◯ Low (Requires C5 option) <br><br> High Alarm = 22.50 mA <br><br> High Saturation = 20.50 mA <br><br><br> Low Alarm = 3.60 mA <br><br> Low Saturation = 3.80 mA | ◯ High (Requires C6 option) <br><br> ◯ Low (Requires C7 option) <br><br> High Alarm _____ mA (must be between 20.2 and 23.0 mA) <br><br> High Saturation _____ mA (must be between 20.1 and 21.5 mA) <br><br> High Alarm must be at least 0.1 mA greater than the High Saturation. <br><br> Low Alarm _____ mA (must be between 3.8 and 3.6 mA) <br><br> Low Saturation _____ mA (must be between 3.9 and 3.7 mA) <br><br> Low Alarm must be 0.1 mA less than the Low Saturation. |
| For Reference Only: <br> Alarm Value: The mA value the transmitter will output if the diagnostics detect a malfunction. <br> Saturation Value: The max. or min. mA output value when the primary variable exceeds the 4–20 mA range, or if the DP measurement exceeds the sensor limit. | | |

## C2 option flow configuration information (C1 option not applicable)

**Note**
For Compensated Flow Transmitters with a C2 option and DP Flowmeters, a DP Flow Configuration Data Sheet (document number 00806-0100-4010) is also required.

| Flow configuration unit | | | |
|---|---|---|---|
| Unit of Measure: | Mass Unit | | Volumetric Unit |
| Mass or Volumetric Flow: | ◯ grams/s | ◯ MetTon/d | ◯ Cuft/s | ◯ gal/s |
| | ◯ grams/min | ◯ lb/s | ◯ Cuft/min | ◯ gal/min |
| | ◯ grams/h | ◯ lb/min | ◯ Cuft/h | ◯ gal/h |
| | ◯ kg/s | ◯ lb/h | ◯ Cuft/d | ◯ gal/d |
| | ◯ kg/min | ◯ lb/day | ◯ Cum/s | ◯ Liter/s |
| | ◯ kg/h | ◯ NmlCum/h | ◯ Cum/min | ◯ Liter/m |
| | ◯ kg/d | ◯ StdCuft/min | ◯ Cum/h | ◯ Liter/h |
| | ◯ MetTon/min | ◯ StdCum/h | ◯ Cum/d | ◯ barrels/h |
| | ◯ MetTon/h | | | ◯ barrels/d |
| | ☐ Custom Unit (base unit to be selected above) | | Example: |
| | Display Custom Unit as: _____ (5 digits, A-Z, 0-9) | | Base Unit = lb/h |
| | Base Units per Custom Unit:_____ | | Custom Unit = ton/h (US ton) |
| | | | Base Units/Custom Unit = 2000 |

| **Flow configuration unit** | | | |
| --- | --- | --- | --- |

Unit of Measure:

Energy Flow: ⚪ Btu/h  ⚪ MJoule/h  ⚪ Therms/d   Example:

☐ Custom Unit (base unit to be selected above)   Base Unit = Btu/h

Display Custom Unit as: _____ (5 digits, A-Z, 0-9)   Custom Unit = Btu/d

Base Units per Custom Unit:_____   Base Units/Custom Unit = 1/24 = 0.04167

| **Primary variable range Values (as selected as PV in variable mapping on page 3)** |
| --- |

PV Range Values:  LRV (4 mA) = 0    URV (20 mA) = _____ Full Scale Flow★ (units of measure selected above)

Note: If PV is other than Flow, then range values will be set to trim values entered in Transmitter Sensor Calibration on page 1.

| **Flow configuration parameters/settings** |
| --- |

Low Flow Cut-off:  DP = _____ (0.05 inH$_2$O★)

Totalizer:  ⚪ Mass or Volumetric Flow  ⚪ Energy Flow

Units of Measure:  _____ Flow Units selected above★

Totalizer Reset Value:  _____ (4.29 billion lbs. or equivalent★)

Note: When Totalizer Reset Value is reached, the totalizer will reset to zero and continue totalizing. The entered value of the Totalizer Reset must be less than 4.29 billion lbs. or equivalent.

Joule-Thomson Correction:  ⚪ Disabled★  ⚪ Enabled

Only available with the following primary elements:
- ISO 5167-2:2003 (E) orifice meters (Flange Tap, Corner Tap, and D & D/2 tap orientations)
- ASME MFC-3M-2-2004 orifice meters (Flange Tap, Corner Tap, and D & D/2 tap orientations)

Only available with the following fluids:
- Engineering Assistant Version 6.1 Database Gases
- Natural Gas - AGA DCM and ISO Molar Composition
- Superheated Steam

Process Temperature Configuration:  Lower Sensor Limit: _____ (-328 °F [-200 °C]★)  Upper Sensor Limit: _____ (1562 °F [850 °C]★)

Temperature Sensor Mode:  ⚪ Normal★

⚪ Backup Temperature Value and Units: _____

⚪ Fixed Temperature Value and Units: _____

## 3051SMV_M (mass and energy flow output):

Some fluid types are only supported by certain measurement types.

Fluid Compatibility with Pressure and Temperature Compensation

• Available
— Not available

| Ordering code | Measurement type | Fluid types | | | |
|---|---|---|---|---|---|
| | | Liquids | Saturated steam | Superheated steam | Gas and natural gas |
| 1 | DP/P/T (Full Compensation) | • | • | • | • |
| 2 | DP/P | • | • | • | • |
| 3 | DP/T | • | • | — | — |
| 4 | DP only | • | • | — | — |

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