Rosemount™ 3144S Configuration Data Sheet

HART® 4–20 mA and Safety Certified Transmitter

★Default ❍Select only one of the items provided ❑ One or more of the listed items can be selected

Customer information

Customer: _____ Name: _____

Phone no.: _____ Fax no./email: _____

P.O./reference no.: _____ P.O. line item: _____

Quote no.: _____ Model no.: _____

Customer sign-off: _____

Tagging

Hardware tag: _____ (32 characters maximum)

Software tag: _____ (8 characters maximum - default is first 8 characters of the hardware tag)

Long software tag: _____ (32 characters maximum)

Measurement 1 (see table below for default configuration)

Sensor Type

- ❍ Pt 100, α = 0.00385
- ❍ Transmitter Sensor Matching (C2 Option)
- ❍ Rosemount X-well
- ❍ PT100, α =0.003916
- ❍ Pt 200, α = 0.00385
- ❍ Pt 200, α = 0.003916
- ❍ Pt 500, α = 0.00385
- ❍ Pt 1000, α = 0.00385
- ❍ Cu 10
- ❍ Ni 120
- ❍ Ohms
- ❍ PT50, α =0.00391
- ❍ PT100, α =0.00391
- ❍ Cu 50 α = 0.00426
- ❍ Cu 50 α = 0.00428
- ❍ Cu 100, α = 0.00426
- ❍ Cu 100, α = 0.00428
- ❍ T/C Type K
- ❍ T/C Type J
- ❍ Rosemount X-well Extended Range
- ❍ T/C Type B
- ❍ T/C Type E
- ❍ T/C Type N
- ❍ T/C Type R
- ❍ T/C Type S
- ❍ T/C Type T
- ❍ mV
- ❍ T/C Type DIN L
- ❍ T/C Type DIN U
- ❍ T/C Type W5Re26
- ❍ T/C Type GOST L
- ❍ Not used

Number of Lead Wires

❍ 2-wire ❍ 3-wire ❍ 4-wire

Measurement 2 (Dual Input Option(Measurement Functionality 2,4))

Sensor Type

- ❍ Not used
- ❍ Pt 100, α = 0.00385
- ❍ Transmitter Sensor Matching (C2 Option)
- ❍ Pt 100, α = 0.003916
- ❍ Pt 200, α = 0.00385
- ❍ Pt 200, α = 0.003916
- ❍ Pt 500, α = 0.00385
- ❍ Pt 1000, α = 0.00385
- ❍ Cu 10
- ❍ Ni 120
- ❍ Ohms
- ❍ PT50, α =0.00391
- ❍ PT100, α =0.00391
- ❍ Cu 50, α = 0.00426
- ❍ Cu 50 α = 0.00428
- ❍ Cu 100, α = 0.00426
- ❍ Cu 100, α = 0.00428
- ❍ T/C Type K
- ❍ T/C Type J
- ❍ T/C Type B
- ❍ T/C Type E
- ❍ T/C Type N
- ❍ T/C Type R
- ❍ T/C Type S
- ❍ T/C Type T
- ❍ mV
- ❍ T/C Type DIN L
- ❍ T/C Type DIN U
- ❍ T/C Type W5Re26
- ❍ T/C Type GOST L

Number of Lead Wires

❍ 2-wire ❍ 3-wire ❍ 4-wire

Default Sensor Configuration	
Single Input option (Measurement Functionality 1)	
Measurement 1	4-wire Pt 100 a = 0.00385 RTD
Measurement 2	Not Used
Dual Input option (Measurement Functionality 2)	
Measurement 1	3-wire Pt 100 a = 0.00385 RTD
Measurement 2	3-wire Pt 100 a = 0.00385 RTD
X-well Assembly Option (Measurement Functionality 3)	
Measurement 1	Selected in model code
Measurement 2	Not Used
Single/Dual Input with Rosemount X-well™ Technology Capability (Transmitter Only) (Measurement Functionality 4)	
Measurement 1	4-wire Pt 100 a = 0.00385 RTD
Measurement 2	Not Used

Primary Variable Range and Units											
4 mA value:	◉ 0 °C★	○ _____ °C	○ _____ °F	○ _____ °R	○ _____ mV	○ _____ K	○ _____ Ohms
20 mA value:	100 °C★	_____ °C	_____ °F	_____ °R	_____ mV	_____ K	_____ Ohms

Note
Custom configuration information below this note requires C1 option code.

Transmitter information
Descriptor: _____ (16 characters)
Message: _____ (32 characters)
Date: _____ (date of calibration★)

Measurement 1	**Measurement 2 (Dual Input Option(Measurement Functionality 2,4))**
RTD Measurement Protection[1] ◉ Off★ ○ On	RTD Measurement Protection[1] ◉ Off★ ○ On
2-wire RTD Offset[2] _____ Ohms	2-wire RTD Offset[2] _____ Ohms
Transmitter Sensor Matching[3]	**Transmitter Sensor Matching[3]**
○ Use Callendar-Van Dusen(CVD) From Existing Order ○ Enter CVD Constants	○ Use Callendar-Van Dusen(CVD) From Existing Order ○ Enter CVD Constants
Sales Order #: _____	Sales Order #: _____
Line #: _____	Line #: _____
R0 #: _____	R0 #: _____
Alpha #: _____	Alpha #: _____
Beta #: _____	Beta #: _____
Delta #: _____	Delta #: _____

1. Previously referred to as Ever Connect. Requires 4-wire RTD sensor input configuration
2. Only available with 2-wire RTD sensor input configuration
3. Only available with C2 option

Measurement 1 (Continued)

X-well Configuration[4]

Pipe Material ◉ Carbon Steel★ ○ 316 SST ○ Chrome-Moly ○ Custom[5]

Pipe Material (Custom Pipe Material): _____

C0 Coefficient (Custom Pipe Material): _____

C1 Coefficient (Custom Pipe Material): _____

C2 Coefficient (Custom Pipe Material): _____

C3 Coefficient (Custom Pipe Material): _____

C4 Coefficient (Custom Pipe Material): _____

Nominal Line Size _____

Pipe Schedule ○ 10S ○ 20 ◉ 40★ ○ 40S/STD ○ 80 ○ 80S/XS ○ 120 ○ 160 ○ Custom

Pipe Thickness (Custom Pipe Schedule): _____

Pipe Thickness Units: ○ Inches ○ mm ○ cm ○ m ○ feet

4. Only available with X-well capability (MF-3,4)
5. For custom configuration, consult factory with pipe material, pipe size and pipe schedule for the appropriate C0-C4 coefficients.

Security

Software Security: ◉ Off★ ○ On

Hardware Security Switch: ◉ Off★ ○ On

Damping

Measurement 1 Damping: ○ 0 Seconds ◉ 5 Seconds★ ○ Other:_____ (0 to 60 seconds)

Measurement 2 Damping: ○ 0 Seconds ◉ 5 Seconds★ ○ Other:_____ (0 to 60 seconds)

Graphical Display Settings

Language: ◉ English★ ○ Chinese ○ French ○ German ○ Italian ○ Portuguese ○ Spanish

Decimal Separator: ◉ Period★ ○ Comma

Light: ○ Off ◉ On★

Rotation(Clockwise): ◉ 0 Degrees★ ○ 90 Degrees ○ 180 Degrees ○ 270 Degrees

Bluetooth[1] ◉ Enabled★ ○ Disabled

1. Requires Bluetooth® connectivity option BLE

Secondary Display Parameters

Select variables below to alternate on graphical display's secondary screen area. Primary variable will always be displayed on primary screen area.

☐ Measurement 1[3] ☐ Measurement 2[2][3] ☐ Loop Current[1][2][3]

☐ Percentage of Range ☐ Terminal Temperature[2][3] ☐ Alarm Switch State

☐ Security Status ☐ HART Long Tag ☐ Bluetooth Status

☐ Average Temperature ☐ Differential Temperature

1. Default secondary display parameter when C1 custom configuration option code is selected. Any selection made above will supersede default.
2. Default secondary display parameters when C1 custom configuration option code is not selected and dual sensor input specified in model structure (Measurement Functionality '2').
3. Default display parameters when C1 custom configuration option code is not selected and U1, U2, U3, U5, or U6 dual-input configuration options are specified in model structure.

Variable mapping (assign each variable by selecting one choice per row/see tables below for default mapping)

	Measurement 1	Measurement 2	Differential	Average	Hot Backup	Avg. with Hot Backup	Terminal Temp.	Sensor 1(1)
PV:	○	○	○	○	○	○	N/A	N/A
SV:	○	○	○	○	○	○	○	○
TV:	○	○	○	○	○	○	○	○
QV:	○	○	○	○	○	○	○	○

1. 'Sensor 1' variable is only available with X-well enabled devices (Measurement Functionality 3 or 4) and allows users to monitor a standard surface temperature value alongside the X-well process temperature value.

Default Variable Mapping	
Single Input option (Measurement Functionality 1)	
Primary variable (HART/4–20 mA)	Measurement 1
Secondary variable	Terminal Temperature
Tertiary variable	Terminal Temperature
Quaternary variable	Terminal Temperature
Dual Input option (Measurement Functionality 2)	
Primary variable (HART/4–20 mA)	Measurement 1
Secondary variable	Measurement 2
Tertiary variable	Terminal Temperature
Quaternary variable	Terminal Temperature
X-well Assembly Option (Measurement Functionality 3)	
Primary variable (HART/4–20 mA)	Measurement 1
Secondary variable	Terminal Temperature
Tertiary variable	Terminal Temperature
Quaternary variable	Terminal Temperature
Single/Dual Input with Rosemount X-well™ Technology Capability (Transmitter Only) (Measurement Functionality 4)	
Primary variable (HART/4–20 mA)	Measurement 1
Secondary variable	Terminal Temperature
Tertiary variable	Terminal Temperature
Quaternary variable	Terminal Temperature

Dual Input option (Measurement Functionality 2,4) U-Code Default Variable Mapping	
U1 Hot Backup	
Primary variable (HART/4–20 mA)	Hot Backup
Secondary variable	Measurement 1
Tertiary variable	Measurement 2
Quaternary variable	Terminal Temperature
U2/U3 Average Temperature With Hot Backup and Sensor Drift Alert	
Primary variable (HART/4–20 mA)	Average With Hot Backup
Secondary variable	Measurement 1
Tertiary variable	Measurement 2
Quaternary variable	Terminal Temperature
U4 Two Independent Sensors	
Primary variable (HART/4–20 mA)	Measurement 1
Secondary variable	Measurement 2
Tertiary variable	Terminal Temperature
Quaternary variable	Terminal Temperature
U5 Differential Temperature	
Primary variable (HART/4–20 mA)	Differential
Secondary variable	Measurement 1
Tertiary variable	Measurement 2
Quaternary variable	Terminal Temperature
U6 Average Temperature	
Primary variable (HART/4–20 mA)	Average
Secondary variable	Measurement 1
Tertiary variable	Measurement 2
Quaternary variable	Terminal Temperature

Custom Alarm and Saturation Signal Levels

Alarm: Values (mA) the transmitter outputs if it detects a gross malfunction condition.

Saturation: Values (mA) the transmitter outputs if applied temperature goes outside the 4-20 mA range values.

Alarm and Saturation levels are defined by option codes:	Alarm Value:	Saturation value:
No option = Standard, High	= 22.5 mA	= 20.80 mA
C8 = Standard, Low	= 3.725 mA	= 3.90 mA
C4 = NAMUR, High	= 22.50 mA	= 20.50 mA
C5 = NAMUR, Low	= 3.575 mA	= 3.80 mA
C6 = Custom, High	Enter Value (20.20 to 23.00) _____ (mA)[1]	(20.10 to 22.9) _____ (mA)
C7 = Custom, Low	Enter Value (3.57 to 3.80) _____ (mA)	(3.67 to 3.90) _____ (mA)[1]

1. High alarm must be 0.1 mA greater than high saturation value, and low saturation must be 0.1 mA greater than low alarm value

Process Alert 1

Process variable alerts will be limited to the range of the sensor type selected. Terminal temperature alerts are limited to -85 to 194 °F (-65 to 90°C).

Monitored Device Variable:

◉ Measurement 1★ ○ Measurement 2 ○ Terminal Temp. ○ Differential ○ Average ○ Hot Backup ○ Sensor 1(1)

Alert Name _____ (14 Characters)

Activation Trigger: ○ Above High Side ○ Below Low Side ○ Inside Window ○ Outside Window

Process alert set points define the boundaries for a designated alert window. Alerts can be set to trigger with respect to the alert window. Above the high side alert only requires a High Alert set point and below the low side only requires a Low Alert set point. Both set points are required for inside or outside window triggers.

High Alert Value _____ Low Alert Value _____

Alert values are limited to the range of the transmitter and will have units of measure that are defined by the selected Monitored Device Variable. High alert must be greater than alert.

Notification Mode: ○ Analog Output Alarm ○ HART Status Alert ◉ Disable★

Sporadic Alert Reduction: ◉ None★ ○ Time Delay _____ seconds ○ Deadband _____

Sporadic Alert Reduction Methods can be used to introduce a buffer in either time (via Time Delay 30 s maximum) or measured process variable (via Deadband) to create a buffer between the process alert limit and alert deactivation. Deadband units of measure will automatically be set to match the previous settings for the Monitored Device Variable.

1. 'Sensor 1' variable is only available with X-well enabled devices (Measurement Functionality 3 or 4) and allows users to monitor a standard surface temperature value alongside the X-well process temperature value.

Process Alert 2

Process variable alerts will be limited to the range of the sensor type selected. Terminal temperature alerts are limited to -85 to 194 °F (-65 to 90°C).

Monitored Device Variable:

○ Measurement 1 ○ Measurement 2 ◉ Terminal Temp.★ ○ Differential ○ Average ○ Hot Backup ○ Sensor 1(1)

Alert Name _____ (14 Characters)

Activation Trigger: ○ Above High Side ○ Below Low Side ○ Inside Window ○ Outside Window

Process alert set points define the boundaries for a designated alert window. Alerts can be set to trigger with respect to the alert window. Above the high side alert only requires a High Alert set point and below the low side only requires a Low Alert set point. Both set points are required for inside or outside window triggers.

High Alert Value _____ Low Alert Value _____

Alert values are limited to the range of the transmitter and will have units of measure that are defined by the selected Monitored Device Variable. High alert must be greater than alert.

Notification Mode: ○ Analog Output Alarm ○ HART Status Alert ◉ Disable★

Sporadic Alert Reduction: ◉ None★ ○ Time Delay _____ seconds ○ Deadband _____

Sporadic Alert Reduction Methods can be used to introduce a buffer in either time (via Time Delay 30 s maximum) or measured process variable (via Deadband) to create a buffer between the process alert limit and alert deactivation. Deadband units of measure will automatically be set to match the previous settings for the Monitored Device Variable.

1. 'Sensor 1' variable is only available with X-well enabled devices (Measurement Functionality 3 or 4) and allows users to monitor a standard surface temperature value alongside the X-well process temperature value.

Sensor drift alert(1)

Sensor drift alert mode: ◉ Disabled★ ○ HART Status Alert ○ Analog Output Alarm

Sensor drift alert limit: ◉ 5 °C★ ○ Other _____

1. Available only with Dual Input measurement functionality

Advanced Filtering

Open Sensor Holdoff:(1) ◉ Normal★ ○ Fast(Disabled)

Transient Filter:(2) ◉ Enabled★ ○ Disabled

1. Filters high voltage intermittent transient signals from creating a false open sensor condition
2. Filters short duration transient spikes that influence output

For more information: **Emerson.com/global**

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