Quick Start Guide
00825-0100-4021, Rev JA
January 2014

Rosemount 3144P Temperature Transmitter with HART® Protocol

ROSEMOUNT

EMERSON.
Process Management

NOTICE

This installation guide provides basic guidelines for the Rosemount 3144P. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, Explosion-proof, Flameproof, or intrinsically safe (I.S.) installations. Refer to the 3144P reference manual (document number 00809-0100-4021) for more instruction. The manual and this QIG are also available electronically on www.emersonprocess.com.

WARNING

Explosions could result in death or serious injury:

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the approvals section of this manual for any restrictions associated with a safe installation,

Process leaks may cause harm or result in death.

- Install and tighten thermowells or sensors before applying pressure.
- Do not remove the thermowell while in operation.

Electrical shock can result in death or serious injury.

- Avoid contact with the leads and the terminals. High voltage that may be present on leads can cause electrical shock.

Conduit/Cable Entries

- The conduit/cable entries in the transmitter housing use a 1/2-14 NPT thread form.
- When installing in a Hazardous Location, use only appropriately listed or Ex certified plugs, glands, or adaptors in cable/conduit entries.

Contents

Step 1: System readiness

Confirm HART revision capability

- If using HART based control or asset management systems, please confirm the HART capability of those systems prior to transmitter installation. Not all systems are capable of communicating with HART Revision 7 protocol. This transmitter can be configured for either HART Revision 5 or 7.
- For instructions on how to change the HART revision of your transmitter, refer to page 4.

Software Release Date	Identify Device		Field Device Driver		Review Instructions
	NAMUR Software Revision	HART Software Revision	HART Universal Revision	Device Revision	Manual Document Number
Mar-2012	1.1.1	2	7	6	00809-0100-4021
			5	5	
Feb-2007	N/A	1	5	4	00809-0100-4021

Step 2: Verify configuration

The Rosemount 3144P communicates using a Field Communicator (communication requires a loop resistance between 250 and 1100 ohms) or AMS Device Manager. Do not operate when power is below 12 Vdc at the transmitter terminal. Refer to the 3144P Reference Manual (document number 00809-0100-4021) and Field Communicator Reference Manual (document number 00809-0100-4276) for more information.

Update the Field Communicator software

The latest Field Communicator Field Device Revision Dev v5 or v6, DD v1 or greater is required to fully communicate with the 3144P. The Device Descriptors are available with new communicators at www.emersonprocess.com or can be loaded into existing communicators at any Emerson Process Management Service Center.

The Device Descriptors are as follows:

Device in HART 5 mode: Device v5 DD v1

Device in HART 7 mode: Device v6 DD v1

Perform the following steps to determine if an upgrade is required. Refer to Figure 1.

1. Connect the sensor (see the wiring diagram located on the inside of the housing cover).
2. Connect the bench power supply to the power terminals (“+” or “–”).
3. Connect a Field Communicator to the loop across a loop resistor or at the power/signal terminals on the transmitter.
4. The following message will appear if the communicator has a previous version of the device descriptors (DDs):

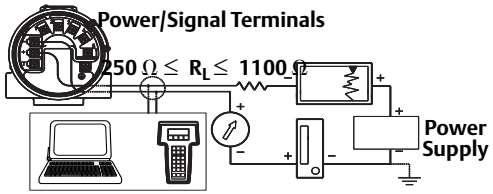
NOTICE: Upgrade the communicator software to access new XMTR functions. Continue with old description?

Note:
If this notice does not appear, the latest DD is installed.

If the latest version is not available, the communicator will communicate properly, but when the transmitter is configured some new capabilities may not be visible.

To prevent this from happening, upgrade to the latest DD or answer NO to the question and default to the generic transmitter functionality.

Figure 1. Connecting a Communicator to a Bench Loop.



Switch HART revision mode

If the HART configuration tool is not capable of communicating with HART Revision 7, the 3144P will load a Generic Menu with limited capability. The following procedures will switch the HART revision mode from the Generic Menu:

1. Manual Setup>Device Information>Identification>Message.
   a. To change to HART Revision 5, Enter: “HART5” in the Message field
   b. To change to HART Revision 7, Enter: “HART7” in the Message field

Function	HART 5 Fast Keys	HART 7 Fast Keys
2-wire Offset Sensor 1	2, 2, 1, 5	2, 2, 1, 6
2-wire Offset Sensor 2	2, 2, 2, 5	2, 2, 2, 6
Alarm Values	2, 2, 5, 6	2, 2, 5, 6
Analog Calibration	3, 4, 5	3, 4, 5
Analog Output	2, 2, 5	2, 2, 5
Average Temperature Setup	2, 2, 3, 3	2, 2, 3, 3
Burst Mode		2, 2, 8, 4
Comm Status		1, 2
Configure additional messages		2, 2, 8, 4, 7
Configure *Hot Backup*	2, 2, 4, 1, 3	2, 2, 4, 1, 3
Date	2, 2, 7, 1, 2	2, 2, 7, 1, 3
Descriptor	2, 2, 7, 1, 3	2, 2, 7, 1, 4
Device Information	2, 2, 7, 1	2, 2, 7, 1
Differential Temperature Setup	2, 2, 3, 1	2, 2, 3, 1
Filter 50/60 Hz	2, 2, 7, 5, 1	2, 2, 7, 5, 1
Find Device		3, 4, 6, 2
First Good Temperature Setup	2, 2, 3, 2	2, 2, 3, 2
Hardware Revision	1, 8, 2, 3	1, 11, 2, 3
HART Lock		2, 2, 9, 2
Intermittent Sensor Detect	2, 2, 7, 5, 2	2, 2, 7, 5, 2
Lock Status		1, 11, 3, 7
Long Tag		2, 2, 7, 2
Loop Test	3, 5, 1	3, 5, 1
LRV (Lower Range Value)	2, 2, 5, 5, 3	2, 2, 5, 5, 3
Message	2, 2, 7, 1, 4	2, 2, 7, 1, 5
Open Sensor Holdoff	2, 2, 7, 4	2, 2, 7, 4
Percent Range	2, 2, 5, 4	2, 2, 5, 4
Sensor 1 Configuration	2, 2, 1	2, 2, 2
Sensor 1 Serial Number	2, 2, 1, 7	2, 2, 1, 8
Sensor 1 Setup	2, 2, 1	2, 2, 1

Function	HART 5 Fast Keys	HART 7 Fast Keys
Sensor 1 Status		2, 2, 1, 2
Sensor 1 Type	2, 2, 1, 2	2, 2, 1, 3
Sensor 1 Unit	2, 2, 1, 4	2, 2, 1, 5
Sensor 2 Configuration	2, 2, 2	2, 2, 2
Sensor 2 Serial Number	2, 2, 2, 7	2, 2, 2, 8
Sensor 2 Setup	2, 2, 2	2, 2, 2
Sensor 2 Status		2, 2, 2, 2
Sensor 2 Type	2, 2, 2, 2	2, 2, 2, 3
Sensor 2 Unit	2, 2, 2, 4	2, 2, 2, 5
Sensor Drift Alert	2, 2, 4, 2	2, 2, 4, 2
Simulate Device Variables		3, 5, 2
Software Revision	1, 8, 2, 4	1, 11, 2, 4
Tag	2, 2, 7, 1, 1	2, 2, 7, 1, 1
Terminal Temperature Units	2, 2, 7, 3	2, 2, 7, 3
URV (Upper Range Value)	2, 2, 5, 5, 2	2, 2, 5, 5, 2
Variable Mapping	2, 2, 8, 5	2, 2, 8, 5
Thermocouple Diagnostic	2, 1, 7, 1	2, 1, 7, 1
Min/Max Tracking	2, 1, 7, 2	2, 1, 7, 2

Step 3: Set the switches

Switch HART revision mode

The 3144P comes with hardware switches to configure alarms and lock the device. Use the following procedure to set the switches.

Without a LCD display

1. Set the loop to manual (if applicable) and disconnect the power.
2. Remove the electronics housing cover.
3. Set the alarm and security switches to the desired position. Reattach housing cover.
4. Apply power and set the loop to automatic control.

With a LCD display

1. Set the loop to manual (if applicable) and disconnect the power.
2. Remove the electronics housing cover.

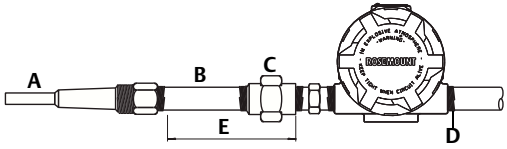
3. Unscrew the LCD display screws and slide the meter straight off.
4. Set the alarm and security switches to the desired position.
5. Reattach the LCD display and electronics housing cover (consider LCD display orientation – rotate in 90 degree increments).
6. Apply power and set the loop to automatic control.

Step 4: Mount the transmitter

Mount the transmitter at a high point in the conduit run to prevent moisture from draining into the transmitter housing.

Typical field mount installation

1. Mount the thermowell to the process container wall. Install and tighten thermowells. Perform a leak check.
2. Attach any necessary unions, couplings, and extension fittings. Seal the fitting threads with an approved thread sealant, such as silicone or PTFE tape (if required).
3. Screw the sensor into the thermowell or directly into the process (depending on installation requirements).
4. Verify all sealing requirements.
5. Attach the transmitter to the thermowell/sensor assembly. Seal all threads with an approved thread sealant, such as silicone or PTFE tape (if required).
6. Install field wiring conduit into the open transmitter conduit entry (for remote mounting) and feed wires into the transmitter housing.
7. Pull the field wiring leads into the terminal side of the housing.
8. Attach the sensor leads to the transmitter sensor terminals (the wiring diagram is located inside the housing cover).
9. Attach and tighten both transmitter covers.

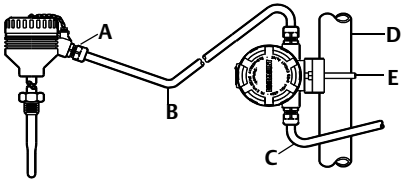


A = Thermowell	D = Conduit for Field Wiring (dc power)
B = Extension (Nipple)	E = Extension Fitting Length
C = Union or Coupling	

Step 4 continued...

Typical remote mount installation

1. Mount the thermowell to the process container wall. Install and tighten thermowells. Perform a leak check.
2. Attach a connection head to the thermowell.
3. Insert sensor into the thermowell and wire the sensor to the connection head (the wiring diagram is located inside the connection head).
4. Mount the transmitter to a 2-in. (50 mm) pipe or a panel using one of the optional mounting bracket (B4 bracket is shown below).
5. Attach cable glands to the shielded cable running from the connection head to the transmitter conduit entry.
6. Run the shielded cable from the opposite conduit entry on the transmitter back to the control room.
7. Insert shielded cable leads through the cable entries into the connection head / transmitter. Connect and tighten cable glands.
8. Connect the shielded cable leads to the connection head terminals (located inside the connection head) and to the sensor wiring terminals (located inside the transmitter housing).



A = Cable Gland
B = Shielded Cable from Sensor to Transmitter
C = Shielded Cable from Transmitter to Control Room
D = 2-in. (50 mm) pipe
E = B4 Mounting Bracket

Step 5: Wire and apply power

Wire the transmitter

- Wiring diagrams are located inside the terminal block cover. See 3144P Single-Sensor below.

3144P Single-Sensor

2-wire RTD and Ohms

3-wire RTD and Ohms**

4-wire RTD and Ohms

T/Cs and Millivolts

RTD with Compensation

* *Transmitter must be configured for a 3-wire RTD in order to recognize an RTD with a compensation loop.*

** *Rosemount provides 4-wire sensors for all single-element RTDs. You can use these RTDs in 3-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.*

3144P Dual-Sensor

ΔT/Hot Backup/Dual Sensor with 2 RTDs*

ΔT/Hot Backup/Dual Sensor with 2 Thermocouples*

ΔT/Hot Backup/Dual Sensor with RTDs/ Thermocouples*

ΔT/Hot Backup/Dual Sensor with RTDs/ Thermocouples*

ΔT/ Hot Backup/Dual Sensor with 2 RTDs with Compensation Loop*

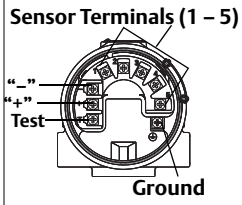
* *Rosemount provides 4-wire sensors for all single-element RTDs. You can use these RTDs in 3-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.*

Step 5 continued...

Power the transmitter

- An external power supply is required to operate the transmitter.

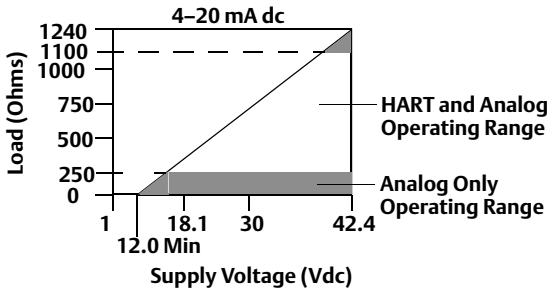
1. Remove the terminal block cover.
2. Connect the positive power lead to the "+" terminal. Connect the negative power lead to the "–" terminal.
3. Tighten the terminal screws.
4. Reattach and tighten the cover.
5. Apply power.



Load limitations

- The power required across the transmitter power terminals is 12 to 42.4 Vdc (the power terminals are rated to 42.4 Vdc). To prevent the possibility of damaging the transmitter, do not allow terminal voltage to drop below 12.0 Vdc when changing the configuration parameters.

Maximum Load = 40.8 X (Supply Voltage - 12.0)[1]



1.Without transient protection (optional)

Ground the transmitter

Ungrounded thermocouple, mV, and RTD/ohm Inputs

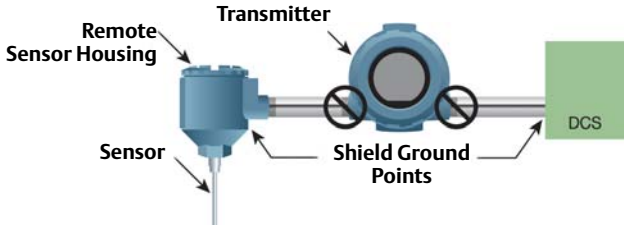
Each process installation has different requirements for grounding. Use the grounding options recommended by the facility for the specific sensor type or begin with grounding Option 1 (the most common).

Option 1 (recommended for ungrounded transmitter housing):

1. Connect signal wiring shield to the sensor wiring shield.
2. Ensure the two shields are tied together and electrically isolated from the transmitter housing.

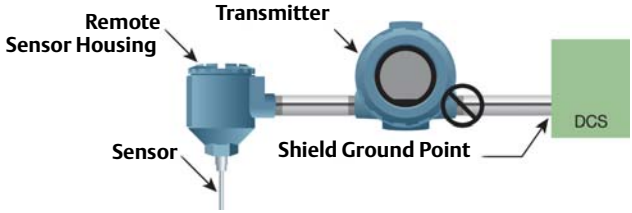
3. Ground shield at the power supply end only.

- Ensure that the sensor shield is electrically isolated from the surrounding grounded fixtures.



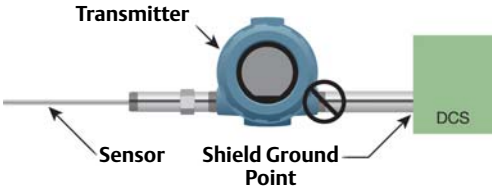
Option 2 (recommended for grounded transmitter housing):

1. Connect sensor wiring shield to the transmitter housing (only if the housing is grounded).
2. Ensure the sensor shield is electrically isolated from surrounding fixtures that may be grounded.
3. Ground signal wiring shield at the power supply end.



Option 3:

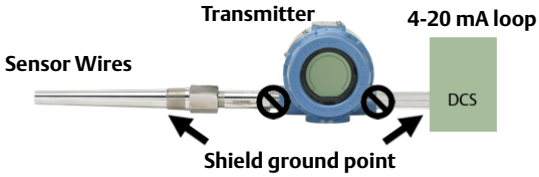
1. Ground sensor wiring shield at the sensor, if possible.
2. Ensure that the sensor wiring and signal wiring shields are electrically isolated from the transmitter housing and other fixtures that may be grounded.
3. Ground signal wiring shield at the power supply end.



Grounded thermocouple inputs

1. Ground sensor wiring shield at the sensor.
2. Ensure that the sensor wiring and signal wiring shields are electrically isolated from the transmitter housing and other fixtures that may be grounded.

3. Ground signal wiring shield at the power supply end.



Step 6: Perform a loop test

The Loop Test verifies transmitter output, loop integrity, and operation of any recorders or similar devices installed in the loop.

Device Dashboard - Device Revision 5 and 6, DD v1

Initiate a loop test

1. Connect an external ampere meter in series with the transmitter loop (so the power to the transmitter goes through the meter at some point in the loop).
2. From the *Home* screen, select 3 Service Tools, 5 Simulate, 1 Perform Loop Test. The communicator displays the loop test menu.
3. Select a discreet milliampere level for the transmitter to output. At *Choose Analog Output* select 1 4mA, 2 20mA, or select 4 Other to manually input a value between 4 and 20 milliamperes. Select Enter to show the fixed output. Select OK.
4. In the test loop, check that the transmitter's actual mA output and the HART mA reading are the same value. If the readings do not match, either the transmitter requires an output trim or the current meter is malfunctioning.
5. After completing the test, the display returns to the loop test screen and allows the user to choose another output value. To end the Loop Test, Select 5 End and Enter.

Initiate simulation alarm

1. From the Home screen, select 3 Service Tools, 5 Simulate, 1 Perform Loop Test, 3 Simulate Alarm.
2. The transmitter will output the alarm current level based on the configured alarm parameter and switch settings.
3. Select 5 End to return the transmitter to normal conditions.

Safety Instrumented System (SIS)

For Safety Certified installations, please refer to the Rosemount 3144P reference manual (document number 00809-0100-4021). The manual is available electronically on www.rosemount.com or by contacting an Emerson Process Management representative.

Product Certifications

European Directive Information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at www.rosemount.com.

Ordinary Location Certification from FM Approvals

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

North America

E5 FM Explosionproof, Dust-Ignitionproof, and Nonincendive
Certificate: 3012752
Standards Used: FM Class 3600: 1998, FM Class 3611: 2004, FM Class 3615: 1989, FM Class 3810: 2005, NEMA-250: 1991, ANSI/ISA 60079-0: 2009, ANSI/ISA 60079-11: 2009
Markings: XP CL I, DIV 1, GP A, B, C, D; T5(-50 °C ≤ Ta ≤ +85 °C); DIP CL II/III, DIV 1, GP E, F, G; T5(-50 °C ≤ Ta ≤ +75 °C); T6(-50 °C ≤ Ta ≤ +60 °C); when installed per Rosemount drawing 03144-0320; NI CL I, DIV 2, GP A, B, C, D; T5(-60 °C ≤ Ta ≤ +75 °C); T6(-60 °C ≤ Ta ≤ +50 °C); when installed per Rosemount drawing 03144-0321, 03144-5075;

I5 FM Intrinsic Safety and Nonincendive
Certificate: 3012752
Standards Used: FM Class 3600: 1998, FM Class 3610: 2010, FM Class 3611: 2004, FM Class 3810: 2005, NEMA-250: 1991, ANSI/ISA 60079-0: 2009, ANSI/ISA 60079-11: 2009
Markings: IS CL I / II / III, DIV 1, GP A, B, C, D, E, F, G; T4(-60 °C ≤ Ta ≤ +60 °C); IS [Entity] CL I, Zone 0, AEx ia IIC T4(-60 °C ≤ Ta ≤ +60 °C); NI CL I, DIV 2, GP A, B, C, D; T5(-60 °C ≤ Ta ≤ +75 °C); T6(-60 °C ≤ Ta ≤ +50 °C); when installed per Rosemount drawing 03144-0321, 03144-5075;

I6 CSA Intrinsic Safety and Division 2
Certificate: 1242650
Standards Used: CAN/CSA C22.2 No. 0-M91 (R2001), CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987;
Markings:Intrinsically Safe for Class I Groups A, B, C, D; Class II, Groups E, F, G; Class III; Intrinsically Safe for Class I Zone 0 Group IIC; T4(-50 °C ≤ Ta ≤ +60 °C); Type 4X;
Suitable for Class I, Div. 2, Groups A, B, C, D;
Suitable for Class I Zone 2 Group IIC; T6(-60 °C ≤ Ta ≤ +60 °C); T5(-60 °C ≤ Ta ≤ +85 °C); when installed per Rosemount drawing 03144-5076;

K6 CSA Explosionproof, Intrinsic Safety and Division 2
Certificate: 1242650
Standards Used: CAN/CSA C22.2 No. 0-M91 (R2001), CSA Std C22.2 No. 30-M1986; CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987;

Markings: Explosionproof for Class I, Groups A, B, C, D; Class II, Groups E, F, G; Class III; Suitable for Class I Zone 1 Group IIC;
Intrinsically Safe for Class I Groups A, B, C, D; Class II, Groups E, F, G; Class III; Suitable for Class I Zone 0 Group IIC; T4(-50 °C ≤ Ta ≤ +60 °C); Type 4X;
Suitable for Class I, Div. 2, Groups A, B, C, D;
Suitable for Class I Zone 2 Group IIC; T6(-60 °C ≤ Ta ≤ +60 °C); T5(-60 °C ≤ Ta ≤ +85 °C); when installed per Rosemount drawing 03144-5076;

Europe

E1 ATEX Flameproof
Certificate: FM12ATEX0065X
Standards Used: EN 60079-0: 2012, EN 60079-1: 2007, EN 60529:1991 +A1:2000
Markings: ⟨Ex⟩ II 2 G Ex d IIC T6...T1 Gb, T6(-50 °C ≤ Ta ≤ +40 °C), T5...T1(-50 °C ≤ Ta ≤ +60 °C);
See Table 1 at the end of the Product Certifications section for Process Temperatures

Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD cover against impact energies greater than 4 joules.
4. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

I1 ATEX Intrinsic Safety
Certificate: BAS01ATEX1431X;
Standards Used: EN 60079-0: 2012; EN 60079-11:2012;
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T5/T6 Ga; T6(-60 °C ≤ Ta ≤ +50 °C), T5(-60 °C ≤ Ta ≤ +75 °C);
See Table 2 at the end of the Product Certifications section for Entity Parameters

Special Conditions for Safe Use (X):

1. When fitted with the transient terminal options, the equipment is not capable of passing the 500V insulation test. This must be taken into account during installation.
2. The enclosure may be made from aluminum alloy with a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion when located in Zone 0.

N1 ATEX Type n
Certificate: BAS01ATEX3432X
Standards: EN 60079-0:2012, EN 60079-15:2010
Markings: ⟨Ex⟩ II 3 G Ex nA IIC T5/T6 Gc; T6(-40 °C ≤ Ta ≤ +50 °C), T5(-40 °C ≤ Ta ≤ +75 °C);

Special Conditions for Safe Use (X):

1. When fitted with the transient terminal options, the equipment is not capable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of EN 60079-15: 2010. This must be taken into account during installation.

ND ATEX Dust

Certificate: FM12ATEX0065X

Standards Used: EN 60079-0: 2012, EN 60079-31: 2009, EN 60529:1991 +A1:2000

Markings: ⟨Ex⟩ II 2 D Ex tb IIIC T130 °C Db, (-40 °C ≤ Ta ≤ +70 °C); IP66

See Table 1 at the end of the Product Certifications section for Process Temperatures

Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD cover against impact energies greater than 4 joules.
4. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

International

E7 IECEx Flameproof

Certificate: IECEx FMG 12.0022X

Standards Used: IEC 60079-0:2011, IEC 60079-1:2007-04, IEC 60079-31:2008

Markings: Ex d IIC T6...T1 Gb, T6(-50 °C ≤ Ta ≤ +40 °C), T5...T1(-50 °C ≤ Ta ≤ +60 °C); Ex tb IIIC T130°C Db, (-40 °C ≤ Ta ≤ +70 °C); IP66;

See Table 1at the end of the Product Certifications section for Process Temperatures

Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD cover against impact energies greater than 4 joules.
4. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

I7 IECEx Intrinsic Safety

Certificate: IECEx BAS 07.0002X

Standards Used: IEC 60079-0: 2011; IEC 60079-11: 2011;

Markings: Ex ia IIC T5/T6 Ga; T6(-60 °C ≤ Ta ≤ +50 °C), T5(-60 °C ≤ Ta ≤ +75 °C);

See Table 2 at the end of the Product Certifications section for Entity Parameters

Special Conditions for Safe Use (X):

1. When fitted with the transient terminal options, the apparatus is not capable of withstanding the 500V electrical strength test as defined in Clause 6.3.13 of IEC 60079-11: 2011. This must be taken into account during installation.
2. The enclosure may be made from aluminum alloy with a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion when located in Zone 0.

N7 IECEx Type n
Certificate: IECEx BAS 070003X
Standards Used: IEC 60079-0:2011, IEC 60079-15:2010
Markings: Ex nA IIC T5/T6 Gc; T6(-40 °C ≤ Ta ≤ +50 °C), T5(-40 °C ≤ Ta ≤ +75 °C);

Brazil

E2 INMETRO Flameproof
Certificate: CEPEL 04.0307X
Standards Used: ABNT NBR IEC 60079-0:2008, ABNT NBR IEC 60079-1:2009, ABNT NBR IEC 60079-26:2008, ABNT NBR IEC 60529:2009
Markings: Ex d IIC T* Gb; T6(-40 °C ≤ Ta ≤ +65 °C), T5(-40 °C ≤ Ta ≤ +80 °C)

Special Conditions for Safe Use (X):

1. The accessory of cable entries or conduit must be certified as flameproof and needs to be suitable for use conditions.
2. For ambient temperature above 60 °C, cable wiring must have minimum isolation for temperature 90 °C, to be in accordance to equipment operation temperature.
3. Where electrical entry is via conduit, the required sealing device must be assembled immediately close to enclosure.

I2 INMETRO Intrinsic Safety
Certificate: CEPEL 05.0723X
Standards Used: ABNT NBR IEC 60079-0:2008, ABNT NBR IEC 60079-11:2009, ABNT NBR IEC 60079-26:2008, ABNT NBR IEC 60529:2009
Markings: Ex ia IIC T* Ga; T6(-60 °C ≤ Ta ≤ +50 °C), T5(-60 °C ≤ Ta ≤ +75 °C), T4(-60 °C ≤ Ta ≤ +60 °C); IP66(Aluminum enclosures), IP66W (Stainless Steel enclosures)
See Table 2 at the end of the Product Certifications section for Entity Parameters

Special Conditions for Safe Use (X):

1. The apparatus enclosure may contain light metals. The apparatus must be installed in such a manner as to minimize the risk of impact or friction with other metal surfaces.
2. A transient protection device can be fitted as an option, in which the equipment will not pass the 500 V test.

China

E3 China Flameproof
Certificate: GYJ11.1650X
Standards Used: GB3836.1-2000, GB3836.2-2010
Markings: Ex d IIC T5/T6 Gb

Special Conditions for Safe Use (X):

1. Symbol "X" is used to denote specific conditions of use: For information on the dimensions of the flameproof joints the manufacturer shall be contacted. This shall be mentioned in the manual.
2. Relation between T code and ambient temperature range is:

T Code	Ambient Temperature
T6	-40 °C ≤ Ta ≤ +70 °C
T5	-40 °C ≤ Ta ≤ +80 °C

3. The earth connection facility in the enclosure should be connected reliably.
4. During installation, there should be no mixture harmful to flameproof housing.
5. During installation in hazardous location. Cable glands, conduits and blanking plugs, certified by state-appointed inspection bodies with Ex d IIC Gb degree, should be used.
6. During installation, use and maintenance in explosive gas atmospheres, observe the warning "Do not open when energized".
7. End users is not permitted to change any components insides, but to settle the problem in conjunction with manufacturer to avoid damage to the product.
8. When installation, use and maintenance of this product, 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)"
   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"

I3 China Intrinsic Safety
Certificate: GYJ11.1536X
Standards Used: GB3836.1-2000, GB3836.4-2010
Markings: Ex ia IIC T4/T5/T6

Special Conditions for Safe Use (X):

1. Symbol "X" is used to denote specific conditions of use:
   a. The enclosure may contain light metal, attention should be taken to avoid ignition hazard due to impact or friction when used in Zone 0.
   b. When fitted with the "Transient Terminal Option", this apparatus is not capable of withstanding the 500V r.m.s. insulation test required by Clause 6.3.12 of GB3836.4-2010.
2. Relation between T code and ambient temperature range is:

T Code	Ambient Temperature
T6	-60 °C ≤ Ta ≤ +50 °C
T5	-60 °C ≤ Ta ≤ +70 °C

3. Parameters:

Power/Loop terminals (+ and -)

Maximum Input Voltage: U_i (V)	Maximum Input Current: I_i (mA)	Maximum Input Power: P_i (W)	Maximum Internal Parameters:	
			C_i (nF)	L_i (μH)
30	300	1	5	0

Sensor terminal (1 to 5)

Maximum Input Voltage: U_o (V)	Maximum Input Current: I_o (mA)	Maximum Input Power: P_o (W)	Maximum Internal Parameters:	
			C_i (nF)	L_i (μH)
13.6	56	0.19	78	0

Load connected to sensor terminals (1 to 5)

Group	Maximum External Parameters	
	C_o (μF)	L_o (mH)
IIC	0.74	11.7
IIB	5.12	44
IIA	18.52	94

Temperature transmitters comply to the requirements for FISCO field devices specified in GB3836.19-2010. FISCO parameters are as follows:

Maximum Input Voltage: U_i (V)	Maximum Input Current: I_i (mA)	Maximum Input Power: P_i (W)	Maximum Internal Parameters:	
			C_i (nF)	L_i (μH)
17.5	380	5.32	2.1	0

4. The product should be used with Ex-certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of the product and associated apparatus.
5. The cables between this product and associated apparatus should be shielded cables (the cables must have insulated shield). The shielded has to be grounded reliably in non-hazardous area.
6. End users are not permitted to change any components insides, but to settle the problem in conjunction with manufacturer to avoid damage to the product.
7. When installation, use and maintenance of this product, 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)”
GB3836.6-2006 “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”

Japan

E4 TIIS Flameproof
Certificate: TC16120, TC16121
Markings: Ex d IIB T6 (-20 °C ≤ Ta ≤ +55 °C)

Certificate: TC16127, TC16128, TC16129, TC16130
Markings: Ex d IIB T4 (-20 °C ≤ Ta ≤ +55 °C)

Combinations

K1 Combination of E1, I1, N1, and ND
K2 Combination of E2 and I2
K5 Combination of E5 and I5
K7 Combination of E7, I7, N7
KA Combination of K1 and K6
KB Combination of K5, I6, and K6

Tables

Table 1. Process Temperatures

Temperature Class	Ambient Temperature	Process Temperature w/o LCD Cover (°C)			
		No ext.	3 in.	6 in.	9 in.
T6	-50 °C to +40 °C	55	55	60	65
T5	-50 °C to +60 °C	70	70	70	75
T4	-50 °C to +60 °C	100	110	120	130
T3	-50 °C to +60 °C	170	190	200	200
T2	-50 °C to +60 °C	280	300	300	300
T1	-50 °C to +60 °C	440	450	450	450

Table 2. Entity Parameters

	Fieldbus/Profibus	HART 5
Voltage U_i (V)	30	30
Current I_i (mA)	300	300
Power P_i (W)	1	1.3
Capacitance C_i (nF)	5	2.1
Inductance L_i (mH)	0	0

ROSEMOUNT

EC Declaration of Conformity

No: RMD 1045 Rev. G

We,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

declare under our sole responsibility that the product,

Model 3144P Temperature Transmitter

manufactured by,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

to which this declaration relates, is in conformity with the provisions of the European Community Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.

(signature)

Vice President of Global Quality
(function name - printed)

Kelly Klein
(name - printed)

6 May 2013
(date of issue)

EMERSON.
Process Management

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ROSEMOUNT

EC Declaration of Conformity

No: RMD 1045 Rev. G

EMC Directive (2004/108/EC)

All Models

Harmonized Standards: EN61326-1:2006, EN61326-2-3: 2006

ATEX Directive (94/9/EC)

Model 3144P Temperature Transmitter (4-20mA/Hart Output)

BAS01ATEX1431X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G (Ex ia IIC T6/T5 Ga)
Harmonized Standards Used:
EN60079-0:2012, EN60079-11:2012

BAS01ATEX3432X – Type n Certificate
Equipment Group II, Category 3 G (Ex nA IIC T6/T5 Gc)
Harmonized Standards Used:
EN60079-0:2012, EN60079-15:2010

Model 3144P Temperature Transmitter (Fieldbus Output)

Baseefa03ATEX0708X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G (Ex ia IIC T4 Ga)
Harmonized Standards Used:
EN60079-0:2012, EN60079-11:2012

Baseefa03ATEX0709 – Type n Certificate
Equipment Group II, Category 3 G (Ex nA IIC T5 Gc)
Harmonized Standards Used:
EN60079-0:2012, EN60079-15:2010

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EC Declaration of Conformity

No: RMD 1045 Rev. G

Model 3144P Temperature Transmitter (all Output Protocols)

FM12ATEX0065X – Dust Certificate
Equipment Group II, Category 2 D (Ex tb IIIC T130°C Db)
Harmonized Standards Used:
EN 60079-0:2012, EN 60079-31:2009

FM12ATEX0065X – Flameproof Certificate
Equipment Group II, Category 2 G (Ex d IIC T6…T1)
Harmonized Standards Used:
EN 60079-0:2012, EN 60079-1:2007

ATEX Notified Bodies for EC Type Examination Certificate

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Rockhead Business Park
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Buxton, Derbyshire SK17 9RZ
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FM Approvals Ltd. [Notified Body Number: 1725]
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ATEX Notified Body for Quality Assurance

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Quick Start Guide
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