Rosemount™ 3144P Temperature Transmitters
with FOUNDATION™ Fieldbus Protocol
NOTICE
This guide provides basic guidelines for Rosemount 3144P. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting or intrinsically safe (I.S.) installations. Refer to the Rosemount 3144P Reference Manual for more instruction. The manual and this guide are also available electronically on Emerson.com/Rosemount.

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. Review the approvals section of this manual for any restrictions associated with a safe installation.
In an Explosion-proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.
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 terminals. High voltage that may be present on leads can cause electrical shock.

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1.0 Mount the transmitter

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

1.1 Typical North America 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.

1.2 Typical European 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.
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).

2.0 Wire and apply power

Connect the transmitter to a FOUNDATION Fieldbus network. Two terminators and a power conditioner are required. The voltage at the transmitter terminals must be between 9 and 32 Vdc to operate properly.

2.1 Power filter

A fieldbus segment requires a power conditioner to isolate the power supply and decouple the segment from other segments attached to the same power supply.

2.2 Power the transmitter

1. Remove the terminal block cover.
2. Connect power to the power terminal. The terminals are polarity insensitive.
3. Tighten the terminal screws.
4. Reattach and tighten the cover.
5. Apply power.
2.3 Wiring diagram

**Figure 2. Rosemount 3144P Single-Sensor**

1. Emerson™ 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.

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

**Figure 3. Rosemount 3144P Dual-Sensor**

1. Emerson 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.
2.4 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 and other grounded fixtures.
3. Ground shield at the power supply end only.
4. Ensure the sensor shield is electrically isolated from the surrounding grounded fixtures.

Note
Each segment in a Fieldbus trunk must be terminated at both ends.
5. Connect shields together, electrically isolated from the transmitter.

![Diagram](image)

A. Sensor wire  
B. Transmitter  
C. Shield ground point

**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 the transmitter housing and other grounded fixtures.
3. Ground signal wiring shield at the power supply end.

![Diagram](image)

A. Sensor wire  
B. Transmitter  
C. Shield ground point

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

![Diagram](image)

A. Sensor wire  
B. Transmitter  
C. Shield ground point

**Grounded thermocouple inputs**
1. Ground sensor wiring shield at the sensor.
2. Ensure the sensor wiring and signal wiring shields are electrically isolated from the transmitter housing and other grounded fixtures.
3. Ground signal wiring shield at the power supply end.

A. Sensor wire
B. Transmitter
C. Shield ground point

3.0 Verify tagging

3.1 Commissioning (paper) tag

To identify which device is at a particular location use the removable tag
provided with the transmitter. Ensure the physical device tag (PD Tag field) is
properly entered in both places on the removable commissioning tag and tear
off the bottom portion for each transmitter.

Note
The device description loaded in the host system must be at the same revision as this
device. The device description can be downloaded from Emerson.com/Rosemount.
Step 1: Verify transmitter configuration

Each FOUNDATION Fieldbus host or configuration tool has a different way of displaying and performing configurations. Some use Device Descriptions (DD) or DD methods for configuration and to display data consistently across platforms. There is no requirement that a host or configuration tool support these features.

The following is the minimum configuration requirement for a temperature measurement. This guide is designed for systems not using DD methods. For a complete list of parameters and configuration information refer to the Rosemount 3144P Temperature Transmitter Reference Manual.

3.2 Transducer function block

This block contains temperature measurement data for the sensors and the terminal temperature. It also includes information about sensor types, engineering units, damping, and diagnostics. At a minimum, verify the parameters in the table below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical configuration</td>
<td></td>
</tr>
<tr>
<td>SENSOR_TYPE_X example: &quot;Pt 100_A_385 (IEC 751)&quot;</td>
<td></td>
</tr>
<tr>
<td>SENSOR_CONNECTIONS_X example: &quot;2-wire&quot;, &quot;3-wire&quot;, &quot;4-wire&quot;</td>
<td></td>
</tr>
<tr>
<td>Sensor matching configuration</td>
<td></td>
</tr>
<tr>
<td>SENSOR_TYPE_X &quot;User Defined, Calvandu&quot;</td>
<td></td>
</tr>
<tr>
<td>SENSOR_CONNECTIONS_X example: &quot;2-wire&quot;, &quot;3-wire&quot;, &quot;4-wire&quot;</td>
<td></td>
</tr>
<tr>
<td>SENSOR_CAL_METHOD_X set to &quot;User Trim Standard&quot;</td>
<td></td>
</tr>
<tr>
<td>SPECIALSENSOR_A_X enter sensor specific coefficients</td>
<td></td>
</tr>
<tr>
<td>SPECIALSENSOR_B_X enter sensor specific coefficients</td>
<td></td>
</tr>
<tr>
<td>SPECIALSENSOR_C_X enter sensor specific coefficients</td>
<td></td>
</tr>
<tr>
<td>SPECIALSENSOR_R0_X enter sensor specific coefficients</td>
<td></td>
</tr>
</tbody>
</table>

Analog Input (AI) function block

The AI block processes field device measurements and makes the outputs available to other function blocks. The output value of the AI block is in engineering units and contains a status indicating the quality of the measurements. Use the Channel number to define the variable that the AI block processes. At a minimum, verify the parameters of each AI block in Table 1.

Note

All devices ship with the AI blocks scheduled, meaning no configuration is needed if the factory default channels are used.
Table 1. AI Block Parameters(1)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL</td>
<td>Choices:</td>
</tr>
<tr>
<td></td>
<td>1. Sensor 1 Temperature</td>
</tr>
<tr>
<td></td>
<td>2. Sensor 2 Temperature</td>
</tr>
<tr>
<td></td>
<td>3. Differential Temperature</td>
</tr>
<tr>
<td></td>
<td>4. Terminal Temperature</td>
</tr>
<tr>
<td></td>
<td>5. Sensor 1 Min. Value</td>
</tr>
<tr>
<td></td>
<td>6. Sensor 1 Max Value</td>
</tr>
<tr>
<td></td>
<td>7. Sensor 2 Min. Value</td>
</tr>
<tr>
<td></td>
<td>8. Sensor 2 Max Value</td>
</tr>
<tr>
<td></td>
<td>9. Differential Min. Value</td>
</tr>
<tr>
<td></td>
<td>10. Differential Max Value</td>
</tr>
<tr>
<td></td>
<td>11. Terminal Temp Min. Value</td>
</tr>
<tr>
<td></td>
<td>12. Terminal Temp Max Value</td>
</tr>
<tr>
<td></td>
<td>13. Hot Backup</td>
</tr>
<tr>
<td>L_TYPE</td>
<td>For most measurements, set to &quot;DIRECT&quot;</td>
</tr>
<tr>
<td>XD_SCALE</td>
<td>Set desired measurement range and units. Units must be one of the following:</td>
</tr>
<tr>
<td></td>
<td>• mV</td>
</tr>
<tr>
<td></td>
<td>• Ohms</td>
</tr>
<tr>
<td></td>
<td>• °C</td>
</tr>
<tr>
<td></td>
<td>• °F</td>
</tr>
<tr>
<td></td>
<td>• °R</td>
</tr>
<tr>
<td></td>
<td>• K</td>
</tr>
<tr>
<td>OUT_SCALE</td>
<td>For &quot;DIRECT&quot; L_TYPE, set OUT_SCALE to match XD_SCALE</td>
</tr>
<tr>
<td>HIGH_HIGH_LIM</td>
<td>Process alarms.</td>
</tr>
<tr>
<td>HIGH_LIM</td>
<td>Must be within the range defined by &quot;OUT_SCALE.&quot;</td>
</tr>
<tr>
<td>LOW_LIM</td>
<td></td>
</tr>
<tr>
<td>LOW_LOW_LIM</td>
<td></td>
</tr>
</tbody>
</table>

1. Configure one AI Block for each desired measurement.

**Note**
To make changes to the AI block, the BLOCK_MODE (TARGET) must be set to OOS (out of service). Once the changes are made, return the BLOCK_MODE TARGET to AUTO.

**Step 2: Set the switches**
The security and simulate switches are located on the top center of the electronics module. Follow the steps below to set the switches.

**Note**
The simulate switch is shipped in the “ON” position from the factory.
3.3 Without a LCD display
1. Set the loop to Out-of-Service (OOS) mode (if applicable) and disconnect the power.
2. Remove the electronics housing cover.
3. Set the switches to the desired position. Reattach housing cover.
4. Apply power and set the loop to In-Service mode.

3.4 With a LCD display
1. Set the loop to Out-of-Service (OOS) (if applicable) and disconnect the power.
2. Remove the electronics housing cover.
3. Unscrew the LCD display meter screws and pull the meter straight off.
4. Set the switches to the desired position. The simulate switch is default set to the “ON” position.
5. Reattach the LCD display meter and electronics housing cover (consider LCD display meter orientation).
6. Apply power and set the loop to In-Service mode.
4.0 Product Certifications

4.1 European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

4.2 Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by 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: FM16US0202X
Markings: XP CI I, DIV 1, GP A, B, C, D; T5(−50 °C ≤ T9 ≤ +85 °C); DIP CI II/III, DIV 1, GP E, F, G; T5(−50 °C ≤ T9 ≤ +75 °C); T6(−50 °C ≤ T9 ≤ +60 °C); when installed per Rosemount drawing 03144-0320; NI CI I, DIV 2, GP A, B, C, D; T5(−60 °C ≤ T9 ≤ +75 °C); T6(−60 °C ≤ T9 ≤ +60 °C); when installed per Rosemount drawing 03144-0321, 03144-5075

I5 FM Intrinsic Safety and Nonincendive
Certificate: FM16US0202X
Markings: IS CI I/II/III, DIV 1, GP A, B, C, D, E, F, G; T4(−60 °C ≤ T9 ≤ +60 °C); IS [Entity] CI I, Zone 0, AEx ia IIC T4(−60 °C ≤ T9 ≤ +60 °C); NI CI I, DIV 2, GP A, B, C, D; T5(−60 °C ≤ T9 ≤ +75 °C); T6(−60 °C ≤ T9 ≤ +60 °C); when installed per Rosemount drawing 03144-0321, 03144-5075

I6 CSA Intrinsic Safety and Division 2
Certificate: 1242650
Markings: Intrinsically Safe for Class I Groups A, B, C, D; Class II, Groups E, F, G; Class III;
[HART only zone markings]: Intrinsically Safe for Class I Zone 0 Group IIC; T4(−50 °C ≤ T9 ≤ +60 °C); Type 4X; Suitable for Class I, Div. 2, Groups A, B, C, D;
[HART only zone markings]: Suitable for Class I Zone 2 Group IIC; T6(−60 °C ≤ T9 ≤ +60 °C); T5(−60 °C ≤ T9 ≤ +85 °C); when installed per Rosemount drawing 03144–5076
K6  CSA Explosionproof, Intrinsic Safety and Division 2
Certificate: 1242650
Markings: Explosionproof for Class I, Groups A, B, C, D
Class II, Groups E, F, G; Class III
[HART only zone markings]: 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;
[HART only zone markings]: Suitable for Class I Zone 0 Group IIC;
T4(–50 °C ≤ T_a ≤ +60 °C); Type 4X; Suitable for Class I, Div. 2, Groups A, B, C, D;
[HART only zone markings]: Suitable for Class I Zone 2 Group IIC;
T6(–60 °C ≤ T_a ≤ +60 °C); T5(–60 °C ≤ T_a ≤ +85 °C); when installed per
Rosemount drawing 03144–5076

Europe
E1  ATEX Flameproof
Certificate: FM12ATEX0065X
Markings:  II 2 G Ex db IIC T6...T1 Gb, T6(–50 °C ≤ T_a ≤ +40 °C), T5...T1(–50 °C ≤ T_a
≤ +60 °C)
See Table 5 at the end of the Product Certifications section for Process Temperatures.

Specific Conditions of 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 display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to
temperature probes with Enclosure option "N".
6. Care shall be taken by the end user to ensure that the external surface
temperature on the equipment and the neck of DIN Style Sensor probe does
not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge.
Avoid installations that cause electrostatic build-up on painted surfaces, and
only clean the painted surfaces with a damp cloth. If paint is ordered through
a special option code, contact the manufacturer for more information.

I1  ATEX Intrinsic Safety
Certificate: BAS01ATEX1431X [HART]; Baseefa03ATEX0708X [Fieldbus];
Markings: HART:  II 1 G Ex ia IIC T5/T6 Ga; T6(–60 °C ≤ T_a ≤ +50 °C), T5(–60 °C ≤ T_a
≤ +75 °C)
Fieldbus:  II 1 G Ex ia IIC T4 Ga; T4(–60 °C ≤ T_a ≤ +60 °C)
See Table 6 at the end of the Product Certifications section for Entity Parameters.
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**Special Conditions for Safe Use (X):**
1. When fitted with the transient terminal options, the equipment is not capable of passing the 500 V 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 [HART]; Baseefa03ATEX0709X [Fieldbus]
Standards: EN 60079-0:2012, EN 60079-15:2010
Markings: HART: II 3 G Ex nA IIC T5/T6 Gc; T6 (–40 °C ≤ T_a ≤ +50 °C), T5 (–40 °C ≤ T_a ≤ +75 °C)
Fieldbus: II 3 G Ex nA IIC T5 Gc; T5 (–40 °C ≤ T_a ≤ +75 °C)

**Special Condition 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
Markings: II 2 D Ex tb IIIC T130 °C Db, (–40 °C ≤ T_a ≤ +70 °C); IP66
See Table 5 at the end of the Product Certifications section for Process Temperatures

**Specific Conditions of 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 display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option “N”.
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
**International**

**E7** IECEx Flameproof

Certificate: IECEx FMG 12.0022X


Markings: Ex db IIC T6…T1 Gb, T6(–50 °C ≤ T_a ≤ +40 °C), T5…T1(–50 °C ≤ T_a ≤ +60 °C)

Ex tb IIIC T130 °C Db, (–40 °C ≤ T_a ≤ +70 °C); IP66

See Table 5 at the end of the Product Certifications section for Process Temperatures

**Specific Conditions of 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 display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option “N”.
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

**I7** IECEx Intrinsic Safety

Certificate: IECEx BAS 07.0002X [HART]; IECEx BAS 07.0004X [Fieldbus]


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

Fieldbus: Ex ia IIC T4 Ga; T4(–60 °C ≤ T_a ≤ +60 °C)

See Table 6 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 500 V 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 07.0003X [HART]; IECEx BAS 07.0005X [Fieldbus]


Markings: HART: Ex nA IIC T5/T6 Gc; T6(–40 °C ≤ T_a ≤ +50 °C), T5(–40 °C ≤ T_a ≤ +75 °C); Fieldbus: Ex nA IIC T5 Gc; T5(–40 °C ≤ T_a ≤ +75 °C)
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Special Condition for Safe Use (X):
1. When fitted with the transient terminal options, the apparatus is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.5.1 of IEC 60079-15: 2010. This must be taken into account during installation.

Brazil

E2 INMETRO Flameproof and Dust
Certificate: UL-BR 13.0535X
Markings: Ex db IIC T6...T1 Gb; T6(−50°C ≤ Ts ≤ +40°C); T5...T1(−50°C ≤ Ts ≤ +60°C)
Ex tb IIIC T130°C Db; IP66; (−40°C ≤ Ts ≤ +70°C)

Special Conditions for Safe Use (X):
1. See product description for ambient temperature limits and process temperature limits.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

I2 INMETRO Intrinsic Safety [HART]
Certificate: UL-BR 15.0088X
Markings: Ex ia IIC T6 Ga (−60°C ≤ Ta ≤ 50°C), Ex ia IIC T5 Ga (−60°C < Ta < 75°C)
See Table 6 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 withstanding the 500 V electrical strength test as defined in ABNT NBR IEC60079-11. 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 and abrasion when located in areas that require EPL Ga (Zone 0).

INMETRO Intrinsic Safety [Fieldbus/FISCO]
Certificate: UL-BR 15.0030X
Markings: Ex ia IIC T4 Ga (−60°C < Ts < 60°C)
See Table 6 at the end of the Product Certifications section for Entity Parameters.

Special Conditions for Safe Use (X):
1. When mounted with the terminal options with transient protection, the equipment is not capable of withstanding the dielectric strength test with 500 V as defined in ABNT NBR IEC 60079-11. This feature should 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 and abrasion when located in areas that require EPL Ga (Zone 0).

**China**

**E3**  China Flameproof  
Certificate: GYJ16.1339X  
Standards: GB3836.1-2010, GB3836.2-2010  
Markings: Ex d IIC T6...T1 Gb

**Special Conditions of 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:

<table>
<thead>
<tr>
<th>T code</th>
<th>Ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>–50 °C ≤ T_a ≤ +40 °C</td>
</tr>
<tr>
<td>T5...T1</td>
<td>–50 °C ≤ T_a ≤ +60 °C</td>
</tr>
</tbody>
</table>

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:  
GB3836.13-2013 “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)”  
GB50257-2014 “Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering”.

**I3**  China Intrinsic Safety  
Certificate: GYJ16.1338X  
Standards: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010  
Markings: Ex ia IIC T4/T5/T6 Ga
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**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 500 V 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:**

3. **Parameters:**

**Table 2. Power/Loop Terminals (+ and -)**

<table>
<thead>
<tr>
<th>Output</th>
<th>Maximum input voltage: $U_i$ (V)</th>
<th>Maximum input current: $I_i$ (mA)</th>
<th>Maximum input power: $P_i$ (W)</th>
<th>Maximum internal parameters: $C_i$ (nF)</th>
<th>$L_i$ (μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HART</td>
<td>30</td>
<td>300</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Fieldbus</td>
<td>30</td>
<td>300</td>
<td>1.3</td>
<td>2.1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 3. Sensor Terminal (1 to 5)**

<table>
<thead>
<tr>
<th>Output</th>
<th>Maximum input voltage: $U_o$ (V)</th>
<th>Maximum input current: $I_o$ (mA)</th>
<th>Maximum input power: $P_o$ (W)</th>
<th>Maximum Internal Parameters: $C_i$ (nF)</th>
<th>$L_i$ (μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HART</td>
<td>13.6</td>
<td>56</td>
<td>0.19</td>
<td>78</td>
<td>0</td>
</tr>
<tr>
<td>Fieldbus</td>
<td>13.9</td>
<td>23</td>
<td>0.079</td>
<td>7.7</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 4. Load Connected to Sensor Terminals (1 to 5)**

<table>
<thead>
<tr>
<th>Output</th>
<th>Group</th>
<th>Maximum external parameters: $C_o$ (μF)</th>
<th>$L_o$ (mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HART</td>
<td>IIC</td>
<td>0.74</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>IIB</td>
<td>5.12</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>IIA</td>
<td>18.52</td>
<td>94</td>
</tr>
<tr>
<td>Fieldbus</td>
<td>IIC</td>
<td>0.73</td>
<td>30.2</td>
</tr>
<tr>
<td></td>
<td>IIB</td>
<td>4.8</td>
<td>110.9</td>
</tr>
<tr>
<td></td>
<td>IIA</td>
<td>17.69</td>
<td>231.2</td>
</tr>
</tbody>
</table>
Temperature transmitters comply to the requirements for FISCO field devices specified in GB3836.19-2010. FISCO parameters are as follows:

<table>
<thead>
<tr>
<th>Maximum input voltage: $U_i$ (V)</th>
<th>Maximum current: $I_i$ (mA)</th>
<th>Maximum input power: $P_i$ (W)</th>
<th>Maximum internal parameters: $C_i$ (nF)</th>
<th>$L_i$ (μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5</td>
<td>380</td>
<td>5.32</td>
<td>2.1</td>
<td>0</td>
</tr>
</tbody>
</table>

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 inside, 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:
   - GB3836.13-2013 “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)”
   - GB3836.18-2010 “Explosive atmospheres Part 18: Intrinsically safe system”
   - GB50257-2014 “Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering”

N3  China Type n
Certificate: GYJ15.1087X [Fieldbus]; GYJ15.1088X [HART]
Standards: GB3836.1-2010, GB3836.8-2003
Markings: Ex nA nL IIC T5 Gc [Fieldbus]; Ex nA nL IIC T5/T6 Gc [HART]

<table>
<thead>
<tr>
<th>Output</th>
<th>T code</th>
<th>Ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fieldbus</td>
<td>T5</td>
<td>$-40^\circ C \leq T_a \leq +75^\circ C$</td>
</tr>
<tr>
<td>HART</td>
<td>T6</td>
<td>$-40^\circ C \leq T_a \leq +50^\circ C$</td>
</tr>
<tr>
<td></td>
<td>T5</td>
<td>$-40^\circ C \leq T_a \leq +75^\circ C$</td>
</tr>
</tbody>
</table>

Special Conditions for Safe Use (X):
1. See certificate for special conditions of use.
2. Max Input Voltage: 42.4 VDC [Fieldbus]; 55 VDC [HART]
3. 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”

**EAC – Belarus, Kazakhstan, Russia**

**EM**  Technical Regulation Customs Union (EAC) Flameproof Standards: GOST 31610.0-2014, GOST IEC 60079-1-2013
   Markings: 1Ex db IIC T6...T1 Gb X; T6(–50 °C ≤ T9 ≤ +40 °C), T5...T1(–50 °C ≤ T9 ≤ +60 °C)
   See Table 5 at the end of the Product Certifications section for Process Temperatures.

**Special Condition for Safe Use (X):**
1. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

**IM**  Technical Regulation Customs Union (EAC) Intrinsic Safety Standards: GOST 31610.0-2014, GOST IEC 60079-11-2014
   Markings: [HART]: 0Ex ia IIC T5, T6 Ga X; T6(–60 °C ≤ T9 ≤ +50 °C), T5(–60 °C ≤ T9 ≤ +75 °C)
   [Fieldbus/PROFIBUS®]: 0Ex ia IIC T4 Ga X; T4(–60 °C ≤ T9 ≤ +60 °C)
   See Table 6 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 500 V electrical strength test as defined in Clause 6.3.13 of GOST 31610.11-2014. 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.

   Markings: Ex tb IIC T130 °C Db X(–40 °C ≤ T9 ≤ +70 °C), IP 66 in addition to markings listed for EM and IM above

**Special Condition for Safe Use (X):**
1. See certificate for special conditions.
**Japan**

E4  TII5 Flameproof  
Certificate: TC21038, TC21039  
Markings: Ex d IIC T5 (–20 °C ≤ T_a ≤ +60 °C)  

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

**Korea**

EP  Korea Flameproof  
Certificate: 10-KB4BO-0011X  
Markings: Ex d IIC T6/T5; T6(-40 °C ≤ T_{amb} ≤ +70 °C), T5(-40 °C ≤ T_{amb} ≤ +80 °C)

Special Condition for Safe Use (X):  
1. See certificate for special conditions.

IP  Korea Intrinsic Safety  
Certificate: 09-KB4BO-0028X  
Markings: Ex ia IIC T6/T5; T6(-60 °C ≤ T_{amb} ≤ +50 °C), T5(-60 °C ≤ T_{amb} ≤ +75 °C)

Special Condition for Safe Use (X):  
1. See certificate for special conditions.

**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  
KM  Combination of EM and IM  
KP  Combination of EP and IP
### Tables

#### Table 5. Process Temperatures

<table>
<thead>
<tr>
<th></th>
<th>T6</th>
<th>T5</th>
<th>T4</th>
<th>T3</th>
<th>T2</th>
<th>T1</th>
<th>T130</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Max ambient</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmitter with LCD display</td>
<td>+40 °C</td>
<td>+60 °C</td>
<td>+60 °C</td>
<td>+60 °C</td>
<td>+60 °C</td>
<td>+70 °C</td>
<td></td>
</tr>
<tr>
<td>Sensor extension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-in.</td>
<td>55 °C</td>
<td>70 °C</td>
<td>95 °C</td>
<td>95 °C</td>
<td>95 °C</td>
<td>95 °C</td>
<td></td>
</tr>
<tr>
<td>3-in.</td>
<td>55 °C</td>
<td>70 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td></td>
</tr>
<tr>
<td>6-in.</td>
<td>60 °C</td>
<td>70 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td>100 °C</td>
<td></td>
</tr>
<tr>
<td>9-in.</td>
<td>65 °C</td>
<td>75 °C</td>
<td>110 °C</td>
<td>110 °C</td>
<td>110 °C</td>
<td>110 °C</td>
<td></td>
</tr>
<tr>
<td>Transmitter without LCD display</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-in.</td>
<td>55 °C</td>
<td>70 °C</td>
<td>100 °C</td>
<td>170 °C</td>
<td>280 °C</td>
<td>440 °C</td>
<td>100 °C</td>
</tr>
<tr>
<td>3-in.</td>
<td>55 °C</td>
<td>70 °C</td>
<td>110 °C</td>
<td>190 °C</td>
<td>300 °C</td>
<td>450 °C</td>
<td>110 °C</td>
</tr>
<tr>
<td>6-in.</td>
<td>60 °C</td>
<td>70 °C</td>
<td>120 °C</td>
<td>200 °C</td>
<td>300 °C</td>
<td>450 °C</td>
<td>110 °C</td>
</tr>
<tr>
<td>9-in.</td>
<td>65 °C</td>
<td>75 °C</td>
<td>130 °C</td>
<td>200 °C</td>
<td>300 °C</td>
<td>450 °C</td>
<td>120 °C</td>
</tr>
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</table>

#### Table 6. Entity Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
<th>FISCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage ( U_i ) (V)</td>
<td>30</td>
<td>30</td>
<td>17.5</td>
</tr>
<tr>
<td>Current ( I_i ) (mA)</td>
<td>300</td>
<td>300</td>
<td>380</td>
</tr>
<tr>
<td>Power ( P_i ) (W)</td>
<td>1</td>
<td>1.3</td>
<td>5.32</td>
</tr>
<tr>
<td>Capacitance ( C_i ) (nF)</td>
<td>5</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Inductance ( L_i ) (mH)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Additional Certifications

**SBS**  
American Bureau of Shipping (ABS) Type Approval  
Certificate: 02-HS289101-4-PDA  
Intended Use: Measurement of temperature for marine and offshore applications.

**SBV**  
Bureau Veritas (BV) Type Approval  
Certificate: 23154  
Requirements: Bureau Veritas Rules for the Classification of Steel Ships  
Application: Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS;  
Temperature transmitter type 3144P cannot be installed on diesel engines

**SDN**  
Det Norske Veritas (DNV) Type Approval  
Certificate: A-14184  
Intended Use: Det Norske Veritas' Rules for Classification of Ships, High Speed and Light Craft and Det Norske Veritas' Offshore Standards

#### Location classes

<table>
<thead>
<tr>
<th>Location classes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>D</td>
</tr>
<tr>
<td>Humidity</td>
<td>B</td>
</tr>
<tr>
<td>Vibration</td>
<td>A</td>
</tr>
<tr>
<td>EMC</td>
<td>A</td>
</tr>
<tr>
<td>Enclosure</td>
<td>D</td>
</tr>
</tbody>
</table>

**SLL**  
Lloyds Register (LR) Type Approval  
Certificate: 11/60002  
Application: Environmental categories ENV1, ENV2, ENV3, and ENV5
We,

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

declare under our sole responsibility that the product,

Rosemount™ 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 Union 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 Union notified body certification, as shown in the attached schedule.

(signature)
Vice President of Global Quality
Chris LaPoint
6-Feb-18

EMC Directive (2014/30/EU)

ATEX Directive (2014/34/EU)

Rosemount 3144P Temperature Transmitter (4-20mA/HART Output)

BA801ATEX1431X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G (Ex ia IIC T5/T6 Ga)

BA801ATEX3432X – Type n Certificate
Equipment Group II, Category 3 G (Ex nA IIC T5/T6 Ge)

Rosemount 3144P Temperature Transmitter (Fieldbus Output)

Baseefa03ATEX0708X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G (Ex ia IIC T4 Ga)

Baseefa03ATEX0709 – Type n Certificate
Equipment Group II, Category 3 G (Ex nA IIC T5 Ge)
EU Declaration of Conformity
No: RMD 1045 Rev. L

Rosemount 3144P Temperature Transmitter (all Output Protocols)

FM12ATEX0065X – Dust Certificate
Equipment Group II, Category 2 D (Ex tb IIIC T130°C Db)
Harmonized Standards:

FM12ATEX0065X – Flameproof Certificate
Equipment Group II, Category 2 G (Ex db IIC T6…T1 Gb)
Harmonized Standards:

ATEX Notified Bodies

SGS Baseefa Limited [Notified Body Number: 1180]
Rockhead Business Park
Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom

FM Approvals Ltd. [Notified Body Number: 1725]
Windsor Dials
Windsor, Berkshire, SL4 1RS
United Kingdom

ATEX Notified Body for Quality Assurance

SGS Baseefa Limited [Notified Body Number: 1180]
Rockhead Business Park
Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom
<table>
<thead>
<tr>
<th>Part Name</th>
<th>Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pb (Pb)</td>
</tr>
<tr>
<td>Electronics Assembly</td>
<td>X</td>
</tr>
<tr>
<td>Housing Assembly</td>
<td>O</td>
</tr>
<tr>
<td>Sensor Assembly</td>
<td>X</td>
</tr>
</tbody>
</table>

This table is proposed in accordance with the provision of SJ/T11364.

O: Indicates that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.
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