

**I/A Series<sup>®</sup> Temperature Transmitter  
Model RTT80 ATEX/IECEX Safety Information**





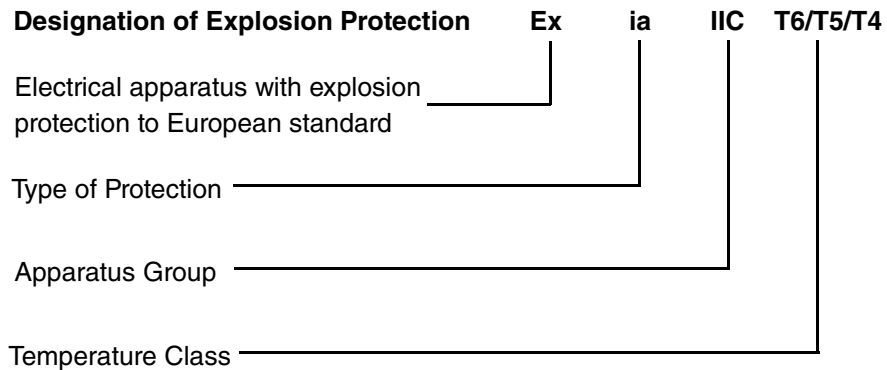
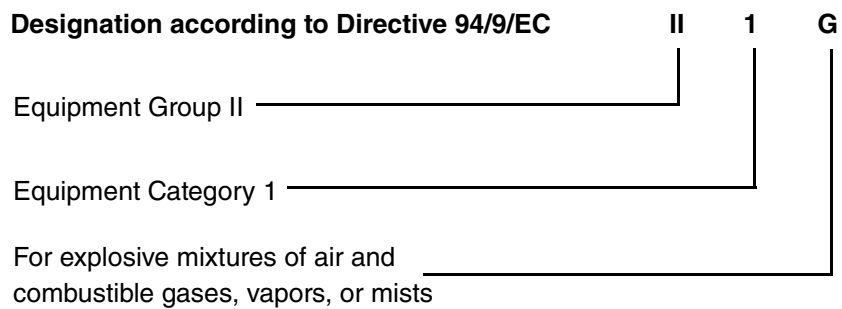
# Contents

<b>1. RTT80, HART, ATEX II 1 G, Ex ia II C.....</b>	<b>5</b>
Safety Instructions for Electrical Apparatus for Explosion-Hazardous Areas According to Directive 94/9/EC (ATEX) .....	5
Safety Instructions (Intrinsic Safety Ex ia) .....	6
Safety Instructions for Zone 1 and 2 .....	6
Safety Instructions for Zone 0 .....	6
<b>2. RTT80, PROFIBUS, FOUNDATION Fieldbus, ATEX II 1 G, II 2G.....</b>	<b>9</b>
Safety Instructions for Electrical Apparatus for Explosion-Hazardous Areas According to Directive 94/9/EC (ATEX) .....	9
Areas of Application .....	9
Safety Instructions (Intrinsic Safety Ex ia) .....	10
Safety Instructions for Zone 1 and 2 .....	10
Safety Instructions for Zone 0 .....	11

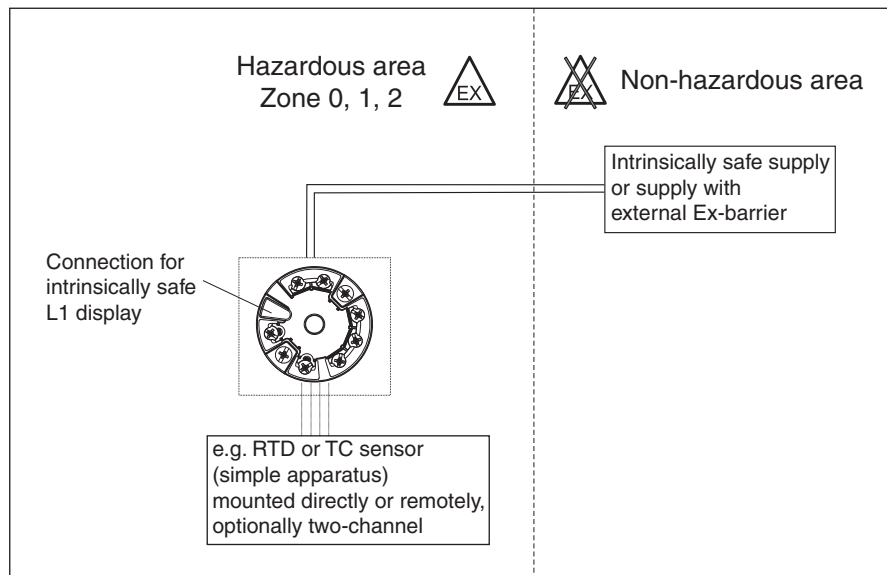


# 1. RTT80, HART, ATEX II 1 G, Ex ia II C

Safety Instructions for Electrical Apparatus for  
Explosion-Hazardous Areas According to  
Directive 94/9/EC (ATEX)



## Safety Instructions (Intrinsic Safety Ex ia)



1. Install the device according to the manufacturer's specifications and the valid standards and regulations.
2. When installing the unit, ensure that the housing ingress protection classification, IP 20 to EN 60529, is upheld.
3. When connecting the measurement unit with the certified circuit of category "ib" to an IIC or IIB hazardous area, the ignition class changes to: Ex ib IIC or Ex ib IIB.
4. The device (terminal head) must be connected to the potential compensation cable.
5. The certified L1 display can be installed only in Zones 1 or 2.
6. Note the permissible ambient temperature for the L1 display.

## Safety Instructions for Zone 1 and 2

1. According to the manufacturer's specifications, this apparatus can be operated in Zone 1 (category 2) or Zone 2 (category 3).
2. The sensor current circuit may be introduced in Zone 0 (category 1).

## Safety Instructions for Zone 0

These instructions are valid only if the unit is to be installed directly in the Zone 0 (category 1) area.

Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions:

$$-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$$

$$0.8 \text{ bar} \leq p \leq 1.1 \text{ bar}$$

1. If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions, according to the manufacturer's specification.

2. The restricted ambient temperatures as per EN 1127-1 6.4.2 must be observed (see the following table).
3. The power circuit to be supplied must meet the specifications for explosion protection, Ex ia IIC (EN 60079-14 12.3).
4. The devices can only be used in fluids if the process-wetted materials are sufficiently resistant to such fluids.
5. If the entire device is operated in Zone 0, the device materials have to be compatible with the fluids. Housing: polycarbonate (PC), potting: polyurethane (PUR).
6. Do not mount the L1 Display in Zone 0.
7. The temperature transmitter must be installed in such a way that electrostatic charge does not occur. For example, it must be installed in grounded metallic head or grounded housing.

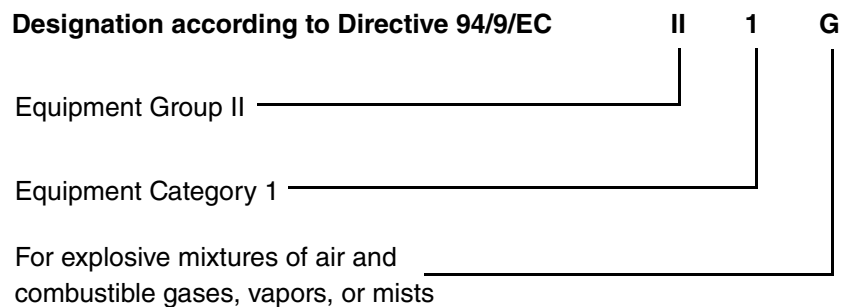
RTT80-T (HART®)		II 1G Ex ia IIC T6/T5/T4	
Power supply (terminals + and -)		$U_i \leq 30 \text{ V dc}$ $I_i \leq 130 \text{ mA}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$	
Sensor circuit (terminals 3 to 7)		$U_0 \leq 7.6 \text{ V dc}$ $I_0 \leq 13 \text{ mA}$ $P_0 \leq 24.7 \text{ mW}$ $C_i = \text{negligibly small}$ $L_i = \text{negligibly small}$	
Max. connection values	Ex ia IIC	$L_0 = 10 \text{ mH}$	$C_0 = 1 \mu\text{F}$
	Ex ia IIB	$L_0 = 50 \text{ mH}$	$C_0 = 4.5 \mu\text{F}$
	Ex ia IIA	$L_0 = 50 \text{ mH}$	$C_0 = 6.7 \mu\text{F}$
Temperature range without display	T6	<b>Zone 1, 2</b> $T_a = -40^\circ\text{C to } +58^\circ\text{C}$	<b>Zone 0</b> $T_a = -40^\circ\text{C to } +46^\circ\text{C}$
	T5	$T_a = -40^\circ\text{C to } +75^\circ\text{C}$	$T_a = -40^\circ\text{C to } +60^\circ\text{C}$
	T4	$T_a = -40^\circ\text{C to } +85^\circ\text{C}$	$T_a = -40^\circ\text{C to } +60^\circ\text{C}$
Temperature range with display	T6	$T_a = -40^\circ\text{C to } +55^\circ\text{C}$	N/A
	T5	$T_a = -40^\circ\text{C to } +70^\circ\text{C}$	N/A
	T4	$T_a = -40^\circ\text{C to } +85^\circ\text{C}$	N/A





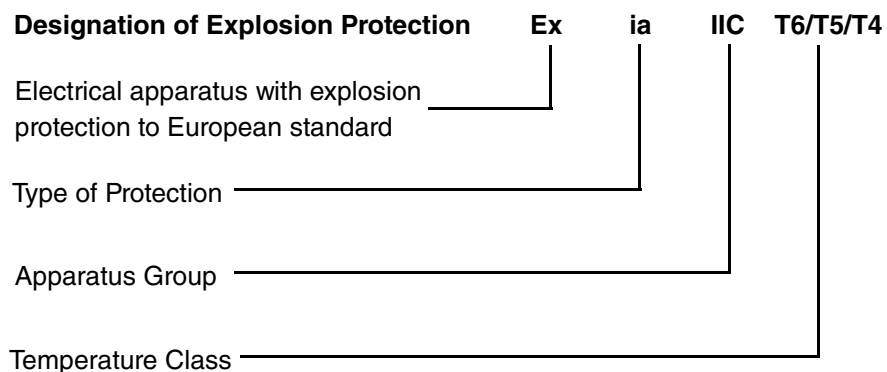
## 2. RTT80, PROFIBUS, FOUNDATION Fieldbus, ATEX II 1 G, II 2G

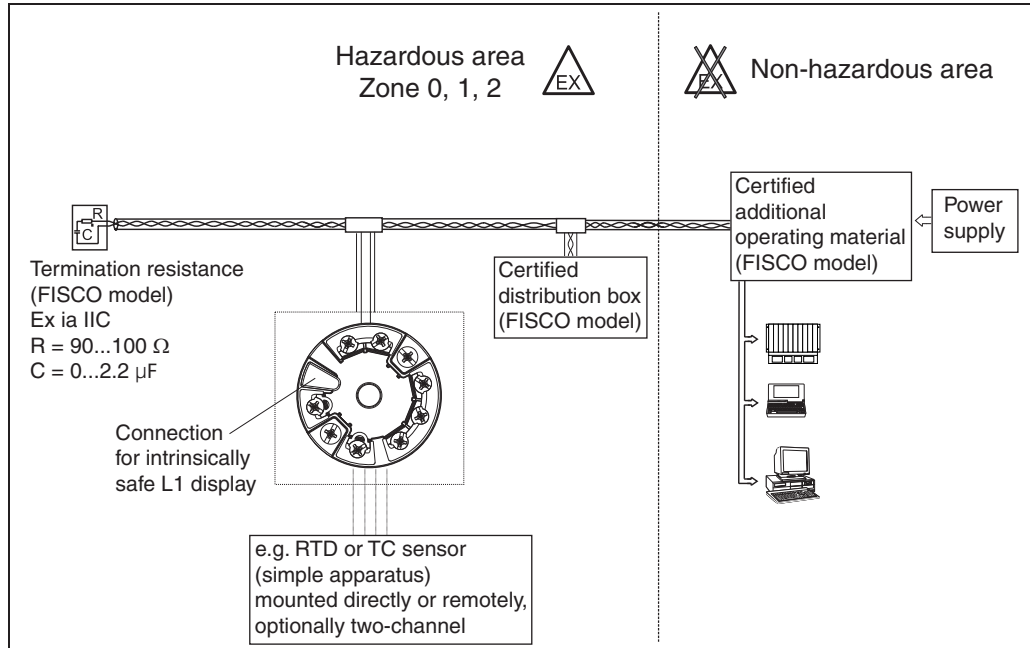
Safety Instructions for Electrical Apparatus for  
Explosion-Hazardous Areas According to  
Directive 94/9/EC (ATEX)



### Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)
Category 1	Zone 0, 1, or 2
Category 2	Zone 1 or 2
Category 3	Zone 2





## Safety Instructions (Intrinsic Safety Ex ia)

1. Install the device according to the manufacturer's specifications and any other valid standards and regulations.
2. When installing the unit, ensure that the housing ingress protection classification, IP 20 to EN 60529, is upheld.
3. When connecting the measurement unit with a certified circuit of category "ib" to an IIC or IIB hazardous area the ignition class changes to: Ex ib IIC or Ex ib IIB.
4. The device (connection head) must be connected to the potential compensation cable.
5. When using a capacitive isolation of the ground system, the maximum capacity must not exceed 10 nF. It must be done in the non-hazardous area (for example, 1 nF capacitors, insulation voltage 1500 V, ceramic).
6. The certified L1 display may be installed only in Zones 1 or 2.

## Safety Instructions for Zone 1 and 2

1. According to the manufacturer's specifications, this apparatus can be operated in Zone 1 (category 2) or Zone 2 (category 3).
2. The sensor current circuit may be introduced in Zone 0 (category 1).

## Safety Instructions for Zone 0

These instructions are valid only if the unit is to be installed directly in the Zone 0 (category 1) area.

Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions:

$$-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$$

$$0.8 \text{ bar} \leq p \leq 1.1 \text{ bar}$$

If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions according to the manufacturers specification.

1. The restricted ambient temperatures, as per EN 1127-1 6.4.2, must be observed (see the following table).
2. The power circuit to be supplied must meet the specifications for explosion protection Ex ia IIC (EN 60079-14 12.3).
3. The devices can only be used in fluids if the process-wetted materials are sufficiently resistant to such fluids.
4. If the entire device is operated in Zone 0, the device materials have to be compatible with the fluids. (Housing: polycarbonate (PC), potting: polyurethane (PUR)).
5. Do not mount the L1 display in Zone 0.
6. The temperature transmitter must be installed in such a way that electrostatic charge does not occur. For example, it must be installed in grounded metallic head or grounded housing.

RTT80, PROFIBUS, FOUNDATION™ Fieldbus		II 1G Ex ia IIC T6/T5/T4 II 2G Ex ia IIC T6/T5/T4	
Power supply (terminals + and -)		$U_i \leq 17.5 \text{ V dc}$ $I_i \leq 500 \text{ mA}$ $C_i \leq 5 \text{ nF}$ $L_i = \text{negligibly small}$	or $U_i \leq 24 \text{ V dc}$ $I_i \leq 250 \text{ mA}$
Applicable for connection to a FOUNDATION™ fieldbus system according to FISCO/FNICO-model			
Sensor circuit (terminals 3 to 7)		$U_0 \leq 7.2 \text{ V dc}$ $I_0 \leq 25.9 \text{ mA}$ $P_0 \leq 46.7 \text{ mW}$ $C_i = 5 \text{ nF}$ $L_i = \text{negligibly small}$	
Max. connection values	Ex ia IIC	$L_0 = 20 \text{ mH}$	$C_0 = 0.97 \mu\text{F}$
	Ex ia IIB	$L_0 = 50 \text{ mH}$	$C_0 = 4.6 \mu\text{F}$
	Ex ia IIA	$L_0 = 100 \text{ mH}$	$C_0 = 6.0 \mu\text{F}$
Temperature range without display	T6	<b>Zone 1, 2</b> $T_a = -40^{\circ}\text{C to } +55^{\circ}\text{C}$ $T_a = -40^{\circ}\text{C to } +70^{\circ}\text{C}$ $T_a = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	<b>Zone 0</b> $T_a = -40^{\circ}\text{C to } +40^{\circ}\text{C}$ $T_a = -40^{\circ}\text{C to } +50^{\circ}\text{C}$ $T_a = -40^{\circ}\text{C to } +60^{\circ}\text{C}$
	T5		
	T4		
Temperature range with display	T6	$T_a = -40^{\circ}\text{C to } +55^{\circ}\text{C}$	N/A
	T5	$T_a = -40^{\circ}\text{C to } +70^{\circ}\text{C}$	N/A
	T4	$T_a = -40^{\circ}\text{C to } +85^{\circ}\text{C}$	N/A

**ISSUE DATES**

APR 2012  
FEB 2014

Vertical lines to the right of text or illustrations indicate areas changed at last issue date.

Invensys  
10900 Equity Drive  
Houston, TX 77041  
United States of America  
<http://www.invensys.com>

Global Customer Support  
Inside U.S.: 1-866-746-6477  
Outside U.S.: 1-508-549-2424 or contact  
your local Invensys representative.  
Website: <http://support.ips.invensys.com>

Invensys, Foxboro, and I/A Series are trademarks of  
Invensys plc, its subsidiaries, and affiliates.  
All other brand names may be trademarks of their  
respective owners.

Copyright 2012-2014 Invensys Systems, Inc.  
All rights reserved