

EE300Ex-xT

Temperature Transmitter for Intrinsically Safe Applications



The EE300Ex temperature transmitter has been designed specifically for measurement in explosion hazard areas. It complies with the classifications for **Europe (ATEX), International (IECEX) and USA / Canada (FM)**.

Accurate measurement over the range $-70...200^{\circ}\text{C}$ ($-94...392^{\circ}\text{F}$) is also possible in applications under pressure from $0.1...20\text{bar}$ ($1.5...300\text{psi}$).

With a stainless steel enclosure and sensing probe the EE300Ex is the ideal transmitter for challenging industrial applications. The 2-part construction facilitates easy installation and fast replacement of the measuring section without time consuming wiring for both models: wall mounted and remote sensing probe up to 10 m (32.8 ft).

The entire EE300Ex can be placed in the explosion hazardous area. The model with remote probe can be used up to T6 temperature class.

Based on 2-wire technology, the transmitter can be powered by any intrinsically safe power source or via Zener barriers. The measured temperature values are available on a $4...20\text{mA}$ analog output and on the optional display.

The EE300Ex is factory-set to the required measuring range. When outside the hazardous area, the transmitter setup can be easily customized by using the supplied configuration software. This includes the configuration of the analog output and the calibration of temperature during service.



EE300Ex - wall mounting



EE300Ex - remote sensing probe

Typical Applications

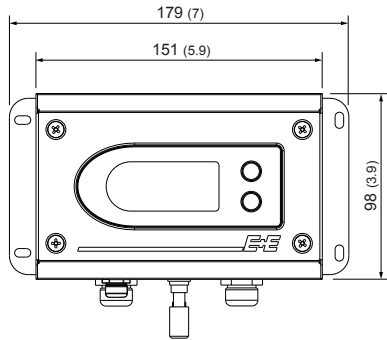
- chemical process control
- pharmaceutical industry
- explosive / hazardous storage rooms
- oil and gas industry

Features

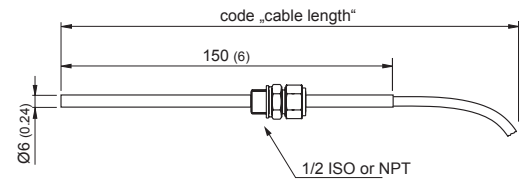
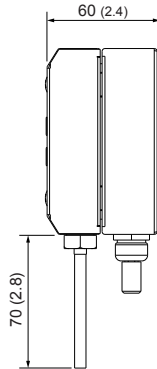
- approved for gas and dust installation in zone 0 / Div. 1
- stainless steel housing and probe
- highest accuracy up to 200°C (392°F)
- pressure tight up to 20bar (300psi)

Models and Dimensions in mm (inches)

Model	pressure range	working range temperature	Ø-probe
A - wall mounting		-40...60 °C (-40...140 °F)	6 (0.24)
M - remote sensing probe	0.1...20 bar (1.5...300 psi)	-70...200 °C (-94...392 °F)	6 (0.24)



EE300Ex - Model A / H
wall mounting /
housing remote sensing probe



EE300Ex - Model H
remote sensing probe 20bar (300psi) with cut-in fitting

Technical Data EE300Ex

Measuring values

Temperature

Temperature sensor

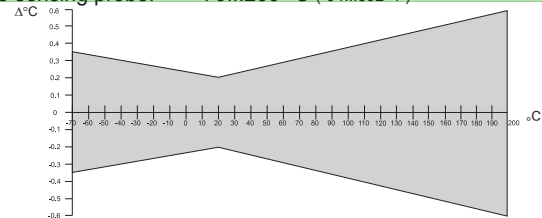
Pt1000 (Tolerance class A, DIN EN 60751)

Measuring range sensor head

wall mounting: -40...60 °C (-40...140 °F)

remote sensing probe: -70...200 °C (-94...392 °F)

Accuracy¹⁾



Temperature dependence of electronics

typ. 0.005 °C/°C

Outputs

Scaleable analogue output

4 - 20 mA (2-wire)

$R_L = (V_{CC} - 9 \text{ V}) / 20 \text{ mA}$

General

Supply voltage (Class III)

$V_{CC \text{ min}} = (9 + R_L \cdot 0.02) \text{ VDC}$ $V_{CC \text{ max}} = 28 \text{ VDC}$

Current consumption

max 20 mA

Pressure range for pressure tight sensor probe

0.1 ... 20 bar (1.5...300 psi)

Serial interface for communication ²⁾

RS232

System requirements for software

WINDOWS XP or later

Protection class of housing

IP65 / Nema 4

Cable gland

M16 for cable diameter 5 - 10 mm (0.2 - 0.4")

Electrical connection

screw terminals max. 1.5 mm² (AWG 16)

Temperature range

sensor head

according measuring range

electronic

-40...60 °C (-40...140 °F)

electronic with display

-20...60 °C (-4...140 °F)

Storage temperature range

electronic and sensor head -20...60 °C (-22...140 °F)

Electromagnetic compatibility according

EN61326-1

EN61326-2-3

ICES-003 ClassB

Industrial Environment

FCC Part15 ClassB



Material

housing

stainless steel 1.4404

probe cable

PTFE

temperature probe

stainless steel 1.4541

1) The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor $k=2$ (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

2) Configuration adapter EE-PCA and cable HA011061 necessary.

Ex - Classifications

Europe (ATEX)

Certificate: TPS 13 ATEX 38892 003 X by TÜV SÜD Product Service GmbH
 Safety factors: $U_i = 28V$; $I_i = 100mA$; $P_i = 700mW$; $C_i = 2.2nF$; $L_i \approx 0mH$

Ex-Designation:

Transmitter without display II 1 G Ex ia IIC T4 Ga / II 1 D Ex ia IIIC T80°C Da
 Transmitter with display II 2 G Ex ia IIC T4 Gb / II 1 G Ex ia IIB T4 Ga
 Remote sensing probe II 1 G Ex ia IIC T6-T1 Ga / II 1 D Ex ia IIIC T80°C...220°C Da

International (IECEx)

Certificate: IECEx FMG 14.0017 X by FM Approvals
 Safety factors: $6.4 Vdc \leq U_i \leq 28Vdc$; $I_i = 100mA$; $P_i = 700mW$; $C_i = 2.2nF$; $L_i = 0mH$

Ex-Designation:

Transmitter without display Ex ia IIC T4 Ta = -40°C to 60°C Ga / Ex ia IIIC T131°C Da
 Transmitter with display Ex ia IIC T4 Ta = -40°C to 60°C Gb / Ex ia IIB T4 Ta = -40°C to 60°C Ga
 Remote sensing probe Ex ia IIC T6-T1 Ta = -70°C to 200°C Ga / Ex ia IIIC T80°C Da

USA and Canada (FM)

Certificate: by FM Approvals
 Safety factors: $6.4 Vdc \leq V_{max} \text{ (or } U_i) \leq 28Vdc$; $I_{max} \text{ (or } I_i) = 100mA$; $P_i = 700mW$; $C_i = 2.2nF$; $L_i = 0mH$

Ex-Designation:

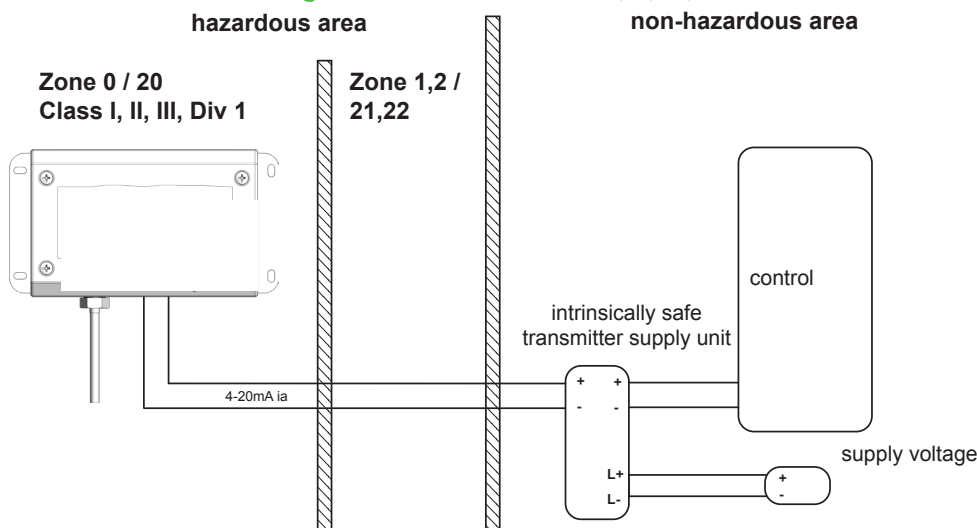
Transmitter without display IS/I,II,III/1/ABCDEFGH/T4 -40°C < Ta < 60°C; Entity – M1_1309080; IP65
 USA: NI/I,II,III/2/ABCDEFGH/T4 -40°C < Ta < 60°C
 Canada: NI/I/2/ABCD/T4 -40°C < Ta < 60°C
 I/O/AEx ia IIC T4 -40°C < Ta < 60°C; Entity – M1_1309080; IP65
 I/O/Ex ia IIC T4 -40°C < Ta < 60°C Ga; Entity – M1_1309080; IP65
 20/ AEx ia IIIC T131°C -40°C < Ta < 60°C; Entity – M1_1309080; IP65

Transmitter with display IS/I/1/CD/T4 -40°C < Ta < 60°C; Entity – M1_1309080
 IS/II/2/ABCD/T4 -40°C < Ta < 60°C; Entity – M1_1309080
 NI/II/2/ABCD/T4 -40°C < Ta < 60°C
 I/O/AEx ia IIB T4 -40°C < Ta < 60°C; Entity – M1_1309080
 I/1/AEx ia IIC T4 -40°C < Ta < 60°C; Entity – M1_1309080
 I/O/Ex ia IIB T4 -40°C < Ta < 60°C Ga; Entity – M1_1309080
 I/1/Ex ia IIC T4 -40°C < Ta < 60°C Gb; Entity – M1_1309080

Remote sensing probe IS/I,II,III/1/ABCDEFGH/T6-T1 Entity – M1_1309080; IP65
 USA: NI/I,II,III /2/ABCDEFGH/T6-T1
 Canada: NI/II/2/ABCD/T6-T1
 I/O/AEx ia IIC T6-T1 Entity – M1_1309080; IP65
 I/O/Ex ia IIC T6-T1 Ga Entity – M1_1309080; IP65
 20/ AEx ia IIIC T80°C Entity – M1_1309080; IP65

Mounting Examples

EE300Ex - wall mounting in zone 0 or 20 / Class I, II, III; Div. 1:



Ordering Guide EE300Ex-xT

		EE300Ex-xT6S	EE300Ex-xT6S	
Hardware Configuration	Model	wall mounting remote sensing probe	A	
	Display	without display with display ¹⁾	x D	
	Electrical Connection	M16 cable gland	B	
	Probe - Cable Length	wall mounting 1m (3.3ft) cable length 2m (6.6ft) cable length 5m (16.4ft) cable length 10m (32.8ft) cable length	x	C E G H
	Probe Length	wall mounting remote sensing probe - 150mm (6")	x	E
	Zone Feedthrough (probe fitting)	without probe fitting 1/2" ISO - cut-in fitting; 6mm (0.24") 1/2" NPT - cut-in fitting; 6mm (0.24")	x	x I J
	Ex-Certification	Europe (ATEX) International (IECEX) USA and Canada (FM)	AT IC FM	AT IC FM
	Setting	Measured Value Units	metric [°C] non-metric [°F]	M N
Scaling Range		temperature	Tx	
		yyy (select according table „scaling ranges“)		

¹⁾ No display possible for environments with combustible dust, fibers and flyings and in gases with EPL Ga IIC (Group A&B)

Scaling Ranges

Tx - Temperature [°C or °F]											
yyy	scaling	yyy	scaling	yyy	scaling	yyy	scaling	yyy	scaling		
002	-40...60	007	0...60	015	20...120	081	-40...250	095	32...300		
003	-10...50	008	-30...70	022	-40...80	082	-40...350	153	-70...200		
004	0...50	012	-40...120	024	-20...80	083	-40...140	154	-94...392		
005	0...100	014	-20...100	077	20...140	085	0...140	155	-40...140		

Please observe the maximum adjustable scaling of the outputs (see Technical Data). Other scaling ranges on request.

Order Example

Example 1:

EE300Ex-xT6SHDBHEIAT/MTx005

Model: remote sensing probe
Display: with display
Electrical Connection: M16 cable gland
Probe - Cable Length: 10m
Probe Length: 150mm
Zone Feedthrough: 1/2" ISO - cut-in fitting
Ex-Certification: ATEX

Measured Value Units: metric
Scaling Range Temperature: 0...100°C

Example 2:

EE300EX-xT6SAxBxxxFM/NTx083

Model: wall mounting
Display: without display
Electrical Connection: M16 cable gland
Probe - Cable Length: wall mounting
Probe Length: wall mounting
Zone Feedthrough: without probe fitting
Ex-Certification: USA and Canada (FM)

Measured Value Units: non metric
Scaling Range Temperature: -40...140 °F

Accessories

Configuration adapter for PC
ATEX Connection cable with protective circuit
EE300Ex to configuration adapter
Blank cover for housing base
Safety Barrier, 1-channel, STAHL 9002/13-280-093-001
Intrinsically safe Transmitter Supply Unit, 1-channel, STAHL 9160/13-11-11
Intrinsically safe Transmitter Supply Unit, 2-channel, STAHL 9160/23-11-11
Sealing plug for unused cable glands

(EE-PCA)
(HA011061)
(HA011401)
(HA011410)
(HA011405)
(HA011406)
(HA011402)