



EE300Ex Series

**HUMIDITY / TEMPERATURE
TRANSMITTER**

**For Intrinsically Safe
Applications**

Operating instructions

YOUR PARTNER IN SENSOR TECHNOLOGY **E+E**

ELEKTRONIK®
Ges.m.b.H.

The operating instructions form part of the equipment supplied and are used to ensure optimal operation and functioning of the device.

E+E Elektronik® Ges.m.b.H. provides no warranty of any kind on this publication and no liability for improper use of the products described.

To ensure perfect functioning, these operating instructions must be read carefully and observed before the transmitter is commissioned. These instructions must be provided to all persons responsible for mounting, commissioning, operation, inspection, maintenance and repair.

These operating instructions must not be used for the purposes of competition without our written permission and must not be forwarded to third parties. Copies may be made for internal purposes. All information, technical data and technical diagrams included in these instructions were correct in accordance with the data available at the time of writing.

The company E+E Elektronik GmbH reserves the right to make modifications at any time and without prior notification, with no update requirement on models produced before the modification date. For this reason, we request that you contact our customer service department, quoting the device number, designation and type given on the nameplate.

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EMC note USA (FCC):

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC note Canada (ICES-003):

CAN ICES-3 (A) / NMB-3 (A)

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1. GENERAL NOTES

1.1 Explanation of symbols



This symbol indicates safety information.

It is essential that this safety information is followed. The manufacturer accepts no liability in the case of contravention. The risk is borne solely by the user.



This symbol indicates an instruction.

These instructions should be observed to achieve optimum functioning of the device.



This symbol indicates regulations that must be observed in hazardous areas at risk of explosion.



1.2 Safety instructions

1.2.1 General safety instructions

In the event of **improper** or **incorrect** use of the device, the following risks occur:

- Hazards for the device and other assets of the user as well as
- Hazards that impair the efficient working of the device.

The following instructions should be observed to ensure personal safety:

- Only qualified or specially trained personnel should be permitted to work on or operate the device.
- These operating instructions must always be available to all persons carrying out mounting, commissioning, operation and servicing.
- It is essential that the device is only operated when in perfect operating condition.
- Any faults determined must be rectified immediately by specialist personnel or by E+E Elektronik customer services.
- No technical modifications to the device are permitted.
- Take care when unscrewing the filter cap as the sensor element may be damaged in the process.
- The sensor element is an ESD-sensitive component, i.e. ESD safety measures must be observed when touching the sensor element.
- Only touch sensors on the connecting wires.
- The devices are designed for operation on safety extra-low voltage (safety class III).

1.3 Environmental aspects



Products from E+E Elektronik® are developed incorporating all important environmental aspects. For this reason, avoiding environmental contamination should also be observed during disposal as well.

On disposal of the transmitter, the individual components must be separated by type.

The electronics must be collected in electronics waste and disposed of correctly.

2. TECHNICAL DESCRIPTION

2.1 General

The entire EE300Ex transmitter can be installed directly in the explosion hazard area.

The EE300Ex is the ideal transmitter in challenging industrial applications. The housing and measurement sensor made from stainless steel, as well as the proven E+E humidity sensors, ensure reliable and stable measurement results over long periods.

The EE300Ex has a 2-wire design and has two individually scalable analogue outputs with 4...20mA. In addition to the measured values for **relative humidity** and **temperature**, the transmitter also delivers the following calculated values:

- Absolute humidity dv
- Wet-bulb temperature Tw
- Specific enthalpy h
- Dew-point temperature Td
- Frost point temperature Tf
- Mixing ratio r
- Water vapour partial pressure e
- Water activity aw
- Water content in mineral transformer oil x [ppm]
- Water content in customer-specific oil x [ppm]

The EE300Ex-HT humidity / temperature transmitter is available in the following designs:

Model	pressure range	working range	Ø-probe
A - wall mounting		-40...60°C (-40...140°F)	12mm (0.47")
remote sensing probe up to 20bar (300psi)	0.1...20 bar (1.5...300 psi)	-40...180°C (-40...356°F)	12mm (0.47")
E - remote sensing probe up to 20bar (300psi) with moveable fitting for assembly / disassembly under pressure	0.1...20 bar (1.5...300 psi)	-40...180°C (-40...356°F)	13mm (0.51")
M - remote sensing probe up to 300bar (4351psi)	0.01...300 bar (0.15...4351 psi)	-40...180°C (-40...356°F)	12mm (0.47")
U - remote sensing probe for sensor retraction tool PN250	0.01...300 bar (0.15...4351 psi)	-40...180°C (-40...356°F)	12/15 (0.47/0.59)

The EE300Ex-xT temperature transmitter is available in the following designs:

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

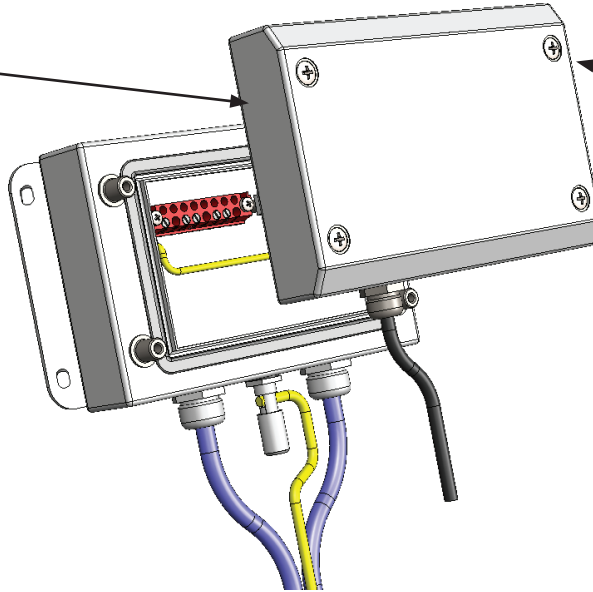
2.2 EE300Ex labeling



Each EE300Ex is only characterized for one certificate. The Ordering Code on the Product label shows the type of the Ex Certificate on position "Ex-certificate". The exact Ex marking with the certificate number is printed on the Hazardous label (Ex marking). EE300Ex with IECEx, USA or Canada labeling must not be installed in the European Union.

**Hazardous Label
(Ex marking)**

Product Label



ATEX hazardous label (for EE300Ex without display)

E+E Elektronik A-4209 Engerwitzdorf
 TPS 13 ATEX 38892 003 X
 II 1 G Ex ia IIC T4 Ga
 II 1 D Ex ia IIIC T80°C Da
 Electrical Data - See Manual
 -40°C ≤ Ta ≤ 60°C

Ui = 28V li = 100mA
 Pi = 700mW Ci = 2,2nF
 Li = negligibly small
 Series: E 072015



ATEX product label (Example)

HUMIDITY / TEMPERATURE TRANSMITTER
EE300Ex-HT6SExBGFHD1AT/MUW001Tx005

CH1: RH: 4-20mA = 0...100 %RH
 CH2: T: 4-20mA = 0...100 °C
 Supply: (9 + RL * 0,02)VDC...28VDC



S/N: 10410900001999 www.epluse.com

IECEx hazardous label (for EE300Ex without display)

E+E Elektronik A-4209 Engerwitzdorf
 IECEx FMG 14.0017 X
 Ex ia IIC T4 Ga
 Ex ia IIIC T131°C Da
 Electrical Data - See Manual
 -40°C ≤ Ta ≤ 60°C

6,4Vdc ≤ Ui < 28Vdc
 li = 100mA Pi = 700mW
 Ci = 2,2nF
 Li = negligibly small
 Series: E 072015

IECEx product label (Example)

HUMIDITY / TEMPERATURE TRANSMITTER
EE300Ex-HT6SExBGFHD1IC/MUW001Tx005

CH1: RH: 4-20mA = 0...100 %RH
 CH2: T: 4-20mA = 0...100 °C
 Supply: (9 + RL * 0,02)VDC...28VDC



S/N: 10410900001999 www.epluse.com

USA hazardous label (for EE300Ex without display)

E+E Elektronik A-4209 Engerwitzdorf FM17US0302X
 CL I,II,III DIV 1 GP ABCDEFG T4
 CL I,II,III DIV 2 GP ABCDEFG T4
 CL I ZN 0 AEx ia IIC T4 Ga ZN 20 AEx ia IIIC T131°C Da
 Ta = -40°C to 60°C, Entity - M1_1309080, IP65 Series: E 122017



USA product label (Example)

HUMIDITY / TEMPERATURE TRANSMITTER
EE300Ex-HT6SExBGFHD1FM/MUW001Tx005

CH1: RH: 4-20mA = 0...100%RH
 CH2: T: 4-20mA = 0...100°C
 Supply: (9 + RL * 0,02)VDC...28VDC



S/N: 10410900001999 www.epluse.com

CANADA hazardous label (for EE300Ex without display)

E+E Elektronik A-4209 Engerwitzdorf FM17CA0154X
 CL I,II,III DIV 1 GP ABCDEFG T4
 CL I,II,III DIV 2 GP ABCDEFG T4
 ZN 0 Ex ia IIC T4 Ga ZN 20 Ex ia IIIC T131°C Da
 Ta = -40°C to 60°C, Entity - M1_1309080, IP65 Series: E 122017



CANADA product label (Example)

HUMIDITY / TEMPERATURE TRANSMITTER
EE300Ex-HT6SExBGFHD1CA/MUW001Tx005

CH1: RH: 4-20mA = 0...100%RH
 CH2: T: 4-20mA = 0...100°C
 Supply: (9 + RL * 0,02)VDC...28VDC



S/N: 10410900001999 www.epluse.com

2.3 Certification

EUROPE:

The EE300Ex transmitter fulfils the **ATEX Directives** on intrinsically safe operating equipment.

Applied standards for ATEX:

- **EN 1127-1:2011**
- **EN 60079-0:2012**
- **EN 60079-11:2012**

The EC type approval test has been carried out by TÜV SÜD Product Service GmbH.

Certified to EC type approval test **TPS 13 ATEX 38892 003 X**.

Entity parameters $U_i = 28V$; $I_i = 100mA$; $P_i = 700mW$; $C_i = 2,2nF$; $L_i \approx 0mH$

Ex-Designation

Transmitter without display $\text{Ex} \text{ II 1 G Ex ia IIC T4 Ga} / \text{Ex} \text{ II 1 D Ex ia IIIC T80°C Da}$

Transmitter with display $\text{Ex} \text{ II 2 G Ex ia IIC T4 Gb} / \text{Ex} \text{ II 1 G Ex ia IIB T4 Ga}$

Remote sensing probe $\text{Ex} \text{ II 1 G Ex ia IIC T6-T1 Ga} / \text{Ex} \text{ II 1 D Ex ia IIIC T80°C...200°C Da}$

Working temperature range for the probes:

Specification of the temperature class "TKG" for use in gas area exposed to explosion hazards and "TKD" for use in dust area exposed to explosion hazards as a function of the ambient temperature "Tamb" for the humidity and temperature probe and the temperature probe:

TKG	TKD	Humidity and Temperature Probe	TKG	TKD	Temperature Probe
T6	80°C	$-40^\circ\text{C} \leq T_{amb} \leq +60^\circ\text{C}$	T6	80°C	$-70^\circ\text{C} \leq T_{amb} \leq +60^\circ\text{C}$
T5	95°C	$-40^\circ\text{C} \leq T_{amb} \leq +75^\circ\text{C}$	T5	95°C	$-70^\circ\text{C} \leq T_{amb} \leq +75^\circ\text{C}$
T4	130°C	$-40^\circ\text{C} \leq T_{amb} \leq +110^\circ\text{C}$	T4	130°C	$-70^\circ\text{C} \leq T_{amb} \leq +110^\circ\text{C}$
T3	195°C	$-40^\circ\text{C} \leq T_{amb} \leq +175^\circ\text{C}$	T3	195°C	$-70^\circ\text{C} \leq T_{amb} \leq +175^\circ\text{C}$
T2	200°C	$-40^\circ\text{C} \leq T_{amb} \leq +180^\circ\text{C}$	T2	220°C	$-70^\circ\text{C} \leq T_{amb} \leq +200^\circ\text{C}$
T1	200°C	$-40^\circ\text{C} \leq T_{amb} \leq +180^\circ\text{C}$	T1	220°C	$-70^\circ\text{C} \leq T_{amb} \leq +200^\circ\text{C}$

INTERNATIONAL:

Applied Standard for IECEx:

- **IEC 60079-0:2011**
- **IEC 60079-11:2011**

The Certificate of Conformity has been carried out by FM Approvals.

Certificate No.: **IECEx FMG 14.0017 X**

Entity parameters: $6.4 \text{ Vdc} \leq U_i \leq 28\text{Vdc}$; $I_i = 100mA$; $P_i = 700mW$; $C_i = 2,2nF$; $L_i = 0mH$

Ex-Designation

Transmitter without display $\text{Ex ia IIC T4 Ga} / \text{Ex ia IIIC T131°C Da}$

Transmitter with display $\text{Ex ia IIC T4 Gb} / \text{Ex ia IIB T4 Ga}$

Remote sensing probe $\text{Ex ia IIC T6-T1 Ga} / \text{Ex ia IIIC T80°C Da}$

Humidity and temperature probe:

- T6 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 60^\circ\text{C} (140^\circ\text{F})$
- T5 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 75^\circ\text{C} (167^\circ\text{F})$
- T4 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 110^\circ\text{C} (230^\circ\text{F})$
- T3 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 175^\circ\text{C} (347^\circ\text{F})$
- T2 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 180^\circ\text{C} (356^\circ\text{F})$
- T1 temperature class based on $-40^\circ\text{C} (-40^\circ\text{F}) \leq T_a \leq 180^\circ\text{C} (356^\circ\text{F})$

Temperature probe:

- T6 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 60^\circ\text{C} (140^\circ\text{F})$
- T5 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 75^\circ\text{C} (167^\circ\text{F})$
- T4 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 110^\circ\text{C} (230^\circ\text{F})$
- T3 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 175^\circ\text{C} (347^\circ\text{F})$
- T2 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 200^\circ\text{C} (392^\circ\text{F})$
- T1 temperature class based on $-70^\circ\text{C} (-94^\circ\text{F}) \leq T_a \leq 200^\circ\text{C} (392^\circ\text{F})$

KOREAN (IECEX based):

Applied law for Korea:
Article 34 of the Occupational Safety & Health Act

The Certificate of Conformity has been carried out by KC.

Certificate No. **REMOTE: 17-AV4BO-0107X**
Certificate No. **WALL: 16-AV4BO-0364X**

Entity parameters: $6.4 \text{ Vdc} \leq U_i \leq 28 \text{ Vdc}$; $I_i = 100 \text{ mA}$; $P_i = 700 \text{ mW}$; $C_i = 2.2 \text{ nF}$; $L_i = 0 \text{ mH}$

Ex-Designation

Transmitter

Ex ia IIC T4 ($T_a = -40^\circ\text{C}$ to 60°C)

Remote sensing probe

Ex ia IIC T6-T1 ($T_a = -40^\circ\text{C}$ to 180°C)

Humidity and temperature probe:

- T6 temperature class based on -40°C (-40°F) $\leq T_a \leq 60^\circ\text{C}$ (140°F)
- T5 temperature class based on -40°C (-40°F) $\leq T_a \leq 75^\circ\text{C}$ (167°F)
- T4 temperature class based on -40°C (-40°F) $\leq T_a \leq 110^\circ\text{C}$ (230°F)
- T3 temperature class based on -40°C (-40°F) $\leq T_a \leq 175^\circ\text{C}$ (347°F)
- T2 temperature class based on -40°C (-40°F) $\leq T_a \leq 180^\circ\text{C}$ (356°F)
- T1 temperature class based on -40°C (-40°F) $\leq T_a \leq 180^\circ\text{C}$ (356°F)

In area with explosive gas group IIC, the EE300Ex must be mounted in zone 1.
In gas Ex area of group IIB the installation in zone 0 is permitted.

No dust certification or temperature probe without humidity.

SPECIFIC CONDITIONS OF USE:

1. There is no display permitted in gas hazard area Zone 0 for group IIC.
2. There is no filter cap made of plastic or with plastic parts permitted in the gas hazard area Zone 0 for group IIC.
3. EE300Ex remote probe (temperature - humidity 12 mm and temperature 6 mm) must be earthed.
4. In case of using both measuring channels, each channel must be driven separately with their own galvanic safety barrier.

JAPAN (IECEX based):

Type Approval Certificate has been carried out by TIIS.

Certificate No.: **TC22061**

Entity parameters: $U_i = 28 \text{ Vdc}$; $I_i = 100 \text{ mA}$; $P_i = 700 \text{ mW}$; $C_i = 2.2 \text{ nF}$; $L_i = 0 \text{ mH}$

Ex-Designation

Ex ia IIC T4 Gb ($T_a = -40^\circ\text{C}$ to 60°C)

No installation in Ga permitted. EE300Ex must be mounted in zone 1.
No dust certification or temperature probe without humidity.

Chinese (IECEX based):

Certificate of Conformity has been carried out by NEPSI.

Cert NO. **GYJ16.1417X**

Entity parameters: $U_i = 28\text{Vdc}$; $I_i = 100\text{mA}$; $P_i = 700\text{mW}$; $C_i = 2.2\text{nF}$; $L_i = 0\text{mH}$

Ex-Designation

Without display:

Ex ia IIC T4 Ga

Ex iaD 20 T131

With display:

Ex ia IIC T4 Gb

Ex ia IIB T4 Ga

Remote sensing probe

Ex ia IIC T1-T6

Ex iaD 20 T80

Temperature operating range	Equipment	Temperature Class
-40°C ~ +60°C	Integrated transmitter	T4/T131
-40°C ~ +60°C / -70°C ~ +60°C	Remote temperature-humidity-probe/ Remote temperature probe	T6/T80
-40°C ~ +75°C / -70°C ~ +75°C		T5
-40°C ~ +110°C / -70°C ~ +110°C		T4
-40°C ~ +175°C / -70°C ~ +175°C		T3
-40°C ~ +180°C / -70°C ~ +200°C		T2
-40°C ~ +180°C / -70°C ~ +200°C		T1

SPECIFIC CONDITIONS OF USE:

1. There is no display permitted in the dust hazardous area and the gas hazard area EPL Ga for group IIC.
2. There is no filter cap made of plastic or with plastic parts permitted in the gas hazard area EPL Ga for group IIC.
3. EE300Ex remote probe (temperature - humidity 12 mm and temperature 6 mm) must be earthed.
4. The serial software configuration port of the EE300Ex may only be used with the EE-PCA configuration adapter and the HA011061 connection cable.
5. For use EE300Ex with remote probe in EPL Ga the remote probe must be installed in a metallic grounded protective tube.
6. In case of using both measuring channels, each channel must be driven separately with their own galvanic safety barrier.

USA:

Applied Standard for the U.S. NEC 500, NEC505 and 506:

• FM Class 3600	2011
• FM Class 3610	2015
• FM Class 3611	2016
• FM Class 3810	2005
• ANSI/ISA 61010-1	2012
• ANSI/ISA 60079-0	2013
• ANSI/ISA 60079-11	2014
• ANSI/IEC 60529	2004

The Certificate of Conformity has been carried out by FM Approvals.

Certificate No.: **FM17US0302X**

Entity parameters:

$$6.4 \text{ Vdc} \leq V_{\max} \text{ (or } U_i) \leq 28 \text{ Vdc}; I_{\max} \text{ (or } I_i) = 100\text{mA}; P_i = 700\text{mW}; C_i = 2,2\text{nF}; L_i = 0\text{mH}$$

Ex-Designation NEC 500 (Division)

Transmitter without display

Class I, II, III, Division 1, Groups ABCDEFG; T4 Ta = -40°C to +60°C; Entity – M1_139080; IP65
Class I, II, III, Division 2, Groups ABCDEFG; T4 Ta = -40°C to +60°C

Transmitter with display

Class I, Division 1, Groups CD; T4 Ta = -40°C to +60°C; Entity – M1_139080
Class I, Division 2, Groups ABCD; T4 Ta = -40°C to +60°C; Entity – M1_139080

Remote sensing probe

Class I, II, III, Division 1, Groups ABCDEFG; T6...T1; Entity – M1_139080; IP65
Class I, II, III, Division 2, Groups ABCDEFG; T6...T1

Humidity and temperature probe:

- T6 temperature class based on -40°C (-40°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -40°C (-40°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -40°C (-40°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -40°C (-40°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)
- T1 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)

Temperature probe:

- T6 temperature class based on -70°C (-94°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -70°C (-94°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -70°C (-94°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -70°C (-94°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)
- T1 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)

Ex-Designation NEC 505/506 (Zone)

Transmitter without display

Class I, Zone 0, AEx ia IIC T4 Ta = -40°C to +60°C Ga; Entity – M1_139080; IP65
Zone 20, AEx ia IIIC T131°C Ta = -40°C to +60°C Da; Entity – M1_139080; IP65

Transmitter with display

Class I, Zone 0, AEx ia IIB T4 Ta = -40°C to +60°C Ga; Entity – M1_139080
Class I, Zone 1, AEx ia IIC T4 Ta = -40°C to +60°C Gb; Entity – M1_139080

Remote sensing probe

Class I, Zone 0, AEx ia IIC T6...T1 Ga; Entity – M1_139080; IP65
Zone 20, AEx ia IIIC T80°C Da; Entity – M1_139080; IP65

Humidity and temperature probe:

- T6 temperature class based on -40°C (-40°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -40°C (-40°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -40°C (-40°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -40°C (-40°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)
- T1 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)

Temperature probe:

- T6 temperature class based on -70°C (-94°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -70°C (-94°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -70°C (-94°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -70°C (-94°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)
- T1 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)

Canada:

Applied Standard for Canada CEC Section 18 and Annex J:

- CSA-22.2 No. 0-M91 R2006
- CAN/CSA-22.2 No. 61010-1 2012
- CSA-22.2 No. 157-92 2016
- CAN/CSA-22.2 No. 60079-0 2015
- CAN/CSA-22.2 No. 60079-11 2014
- CSA-C 22.2 No. 142-M1987 R2004
- CSA-C 22.2 No. 213 2015
- CSA-C 22.2 No. 60529 R2010

The Certificate of Conformity has been carried out by FM Approvals.

Certificate No.: **FM17CA0154X**

Entity parameters:

$$6.4 \text{ Vdc} \leq V_{\max} \text{ (or } U_i) \leq 28 \text{ Vdc}; I_{\max} \text{ (or } I_i) = 100\text{mA}; P_i = 700\text{mW}; C_i = 2,2\text{nF}; L_i = 0\text{mH}$$

Ex-Designation CEC Annex J (Division)

Transmitter without display

Class I, II, III, Division 1, Groups ABCDEFG; T4 Ta = -40°C to +60°C; Entity – M1_139080; IP65
Class I, II, III, Division 2, Groups ABCDEFG; T4 Ta = -40°C to +60°C

Transmitter with display

Class I, Division 1, Groups CD; T4 Ta = -40°C to +60°C; Entity – M1_139080
Class I, Division 2, Groups ABCD; T4 Ta = -40°C to +60°C; Entity – M1_139080

Remote sensing probe

Class I, II, III, Division 1, Groups ABCDEFG; T6...T1; Entity – M1_139080; IP65
Class I, II, III, Division 2, Groups ABCDEFG; T6...T1

Humidity and temperature probe:

- T6 temperature class based on -40°C (-40°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -40°C (-40°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -40°C (-40°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -40°C (-40°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)
- T1 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)

Temperature probe:

- T6 temperature class based on -70°C (-94°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -70°C (-94°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -70°C (-94°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -70°C (-94°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)
- T1 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)

Ex-Designation CEC Section 18 (Zone)

Transmitter without display

Zone 0, Ex ia IIC T4 Ta = -40°C to +60°C Ga; Entity – M1_139080; IP65
Zone 20, Ex ia IIIC T131°C Ta = -40°C to +60°C Da; Entity – M1_139080; IP65

Transmitter with display

Zone 0, Ex ia IIB T4 Ta = -40°C to +60°C Ga; Entity – M1_139080
Zone 1, Ex ia IIC T4 Ta = -40°C to +60°C Gb; Entity – M1_139080

Remote sensing probe

Zone 0, Ex ia IIC T6...T1 Ga; Entity – M1_139080; IP65
Zone 20, Ex ia IIIC T80°C Da; Entity – M1_139080; IP65

Humidity and temperature probe:

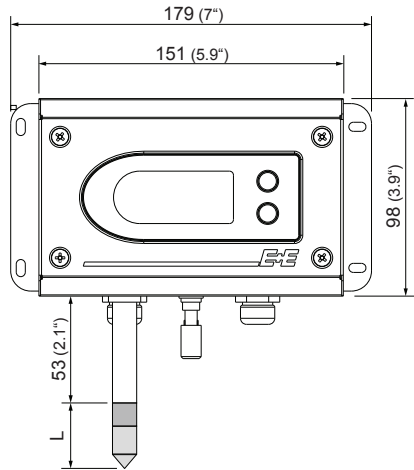
- T6 temperature class based on -40°C (-40°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -40°C (-40°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -40°C (-40°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -40°C (-40°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)
- T1 temperature class based on -40°C (-40°F) ≤ Ta ≤ 180°C (356°F)

Temperature probe:

- T6 temperature class based on -70°C (-94°F) ≤ Ta ≤ 60°C (140°F)
- T5 temperature class based on -70°C (-94°F) ≤ Ta ≤ 75°C (167°F)
- T4 temperature class based on -70°C (-94°F) ≤ Ta ≤ 110°C (230°F)
- T3 temperature class based on -70°C (-94°F) ≤ Ta ≤ 175°C (347°F)
- T2 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)
- T1 temperature class based on -70°C (-94°F) ≤ Ta ≤ 200°C (392°F)

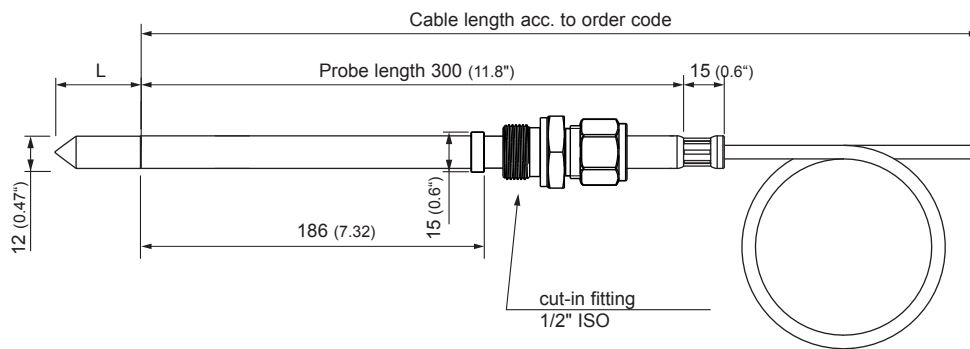
2.4 Housing and probe dimensions

Wall mounting humidity and temperature - Model A

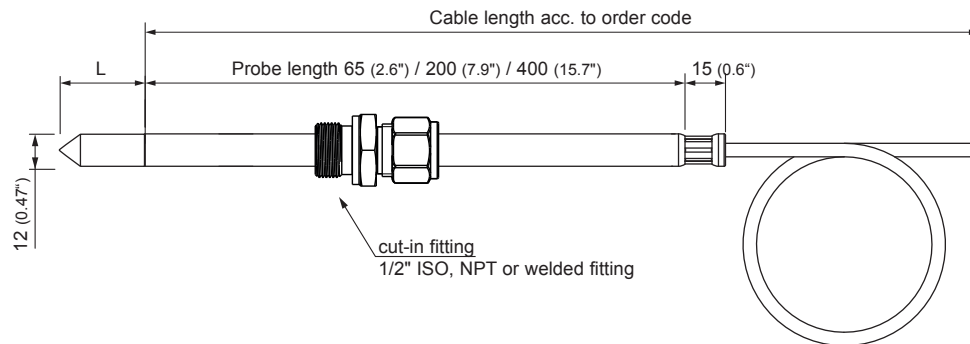


L = filter cap	Length in mm
Stainless steel sinter filter	33 (1.3")
PTFE filter	33 (1.3")
Stainless steel grid filter	39 (1.5")
Oil filter	32 (1.26")

Remote sensing probe humidity/temperature up to 300 bar (4351 psi) - Model U

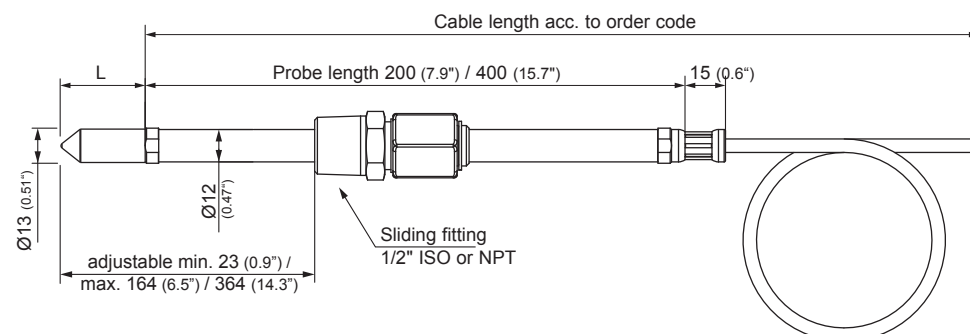


Remote sensing probe humidity/temperature up to 20bar (300psi) or 300 bar (4351 psi) - Model E and M



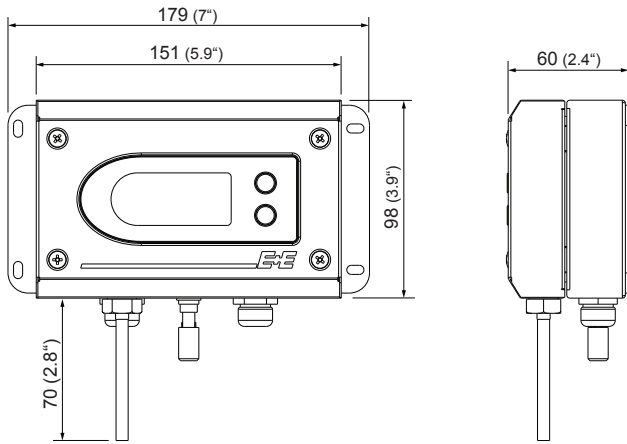
Pressure-tight probe up to 300 bar (4351 psi) have a leak rate A according to EN12266-1

Remote sensing probe humidity/temperature up to 20bar (300psi) - Model E with sliding fitting

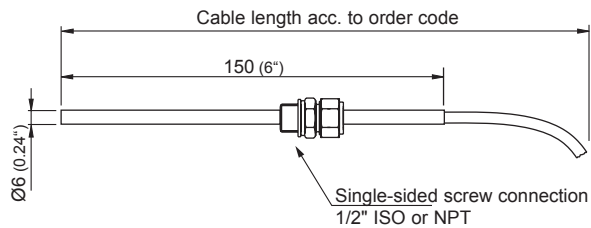


Pressure-tight probe up to 20bar (300psi) have a leak rate B according to EN12266-1

Wall mounting temperature - xT model

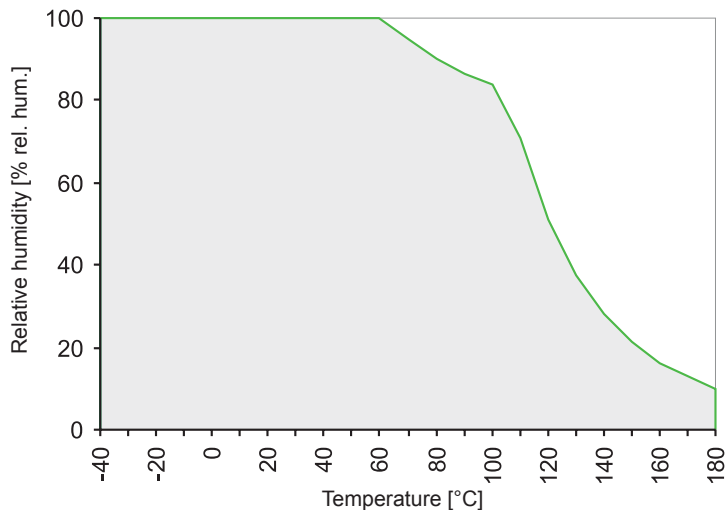


Remote sensing probe temperature



2.5 Humidity probe working range

The grey area shows the allowed measurement range for the humidity sensor. Although working points that lie outside of this range do not lead to the destruction of the element, the specified measurement accuracy cannot be guaranteed, however.



2.6 Dewpoint measurement in natural gas

Valid only for EE300Ex-HT6S...Gx (Special option for natural Gas application)

The accuracy of the dewpoint measurement is affected by the working pressure. The actual working pressure has to be set with the configuration software. Menu item "Configuration" --> "Parameters"

Factory setting: 1013.25 mbar

2.7 Measurement of moisture in oil



Besides measurement in the air, the EE300Ex can be employed for measurement of both absolute water content (x) in ppm or relative water activity (aw) in oils. The USA and Canada approval is valid for air and gas measurement only.

3. INSTALLATION IN AN EXPLOSION HAZARD AREA

3.1 General



The EE300Ex has been certified in accordance with the ATEX 2014/34/EU Directive, IECEx Scheme, , National Electrical Code ANSI-NFPA 70 (NEC®) and Canadian Electrical Code (CSA C22.1).



Devices in explosion-hazard areas are only permitted for operation in atmospheric conditions

-20 °C (-4°F) ≤ T ≤ 40 °C (104 °F)
0.8 bar (12 psi) ≤ p ≤ 1.1 bar (16 psi)
In air normally 21 % (V/V)

If suitable measures have been carried out in accordance with EN1127-1, the EE300Ex is also permitted for operation outside atmospheric conditions in line with the manufacturer's instructions.



When conducting measurements in explosion-hazard areas, the EE300Ex must always be connected via intrinsically safe power supply devices or protective barriers.

Even if only the measurement probe is installed in the explosion hazard area, the EE300Ex must be supplied using intrinsically safe equipment.

Rules for the interconnection of intrinsically safe electrical circuits in accordance with EN60079-14, EN60079-25 and IEC60079-14, IEC60079-25 (proof of intrinsic safety in the system description) and national requirements should be followed. For the U.S., Canada see Control Drawing M1_1309080 and ANSI/ISA RP12.6.01, NEC and CEC.



If a risk analysis of the installation in line with EN1127-1 reveals a risk of lightning strike, an overvoltage protection device should be installed in the intrinsically safe circuits.

Requirements for the installation of overvoltage protective devices can be found in the standard EN60079-25. For the U.S., Canada see ANSI/ISA RP12.6.01, NEC and CEC.

Example of an overvoltage protection device

Manufacturer: Dehn

Type: ITAK EXI BXT 24

to protect intrinsically safe measurement circuits for 2DA

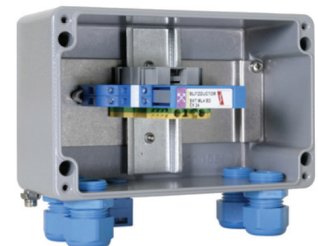
C2 nominal discharge surge current: (8/20) 20 kA

Nominal voltage: 30 V DC

max. permiss. input voltage: 33 V DC

max. permiss. input current: 0.5 A

Alu housing, grey, protection rating: IP 65



ATEX Approval:

II 2 (1) G Ex ia IIC T4, T5, T6

II 2 G Ex ib IIC T4, T5, T6



Follow the installation instructions from DEHN!



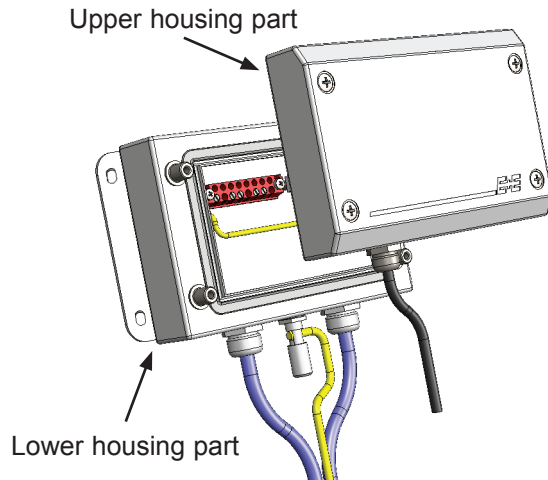
Each EE300Ex is provided with its production date. The production date is shown on the label (after the series) as follows:

WWYYYY WW week of the year of construction
YYYY year of construction

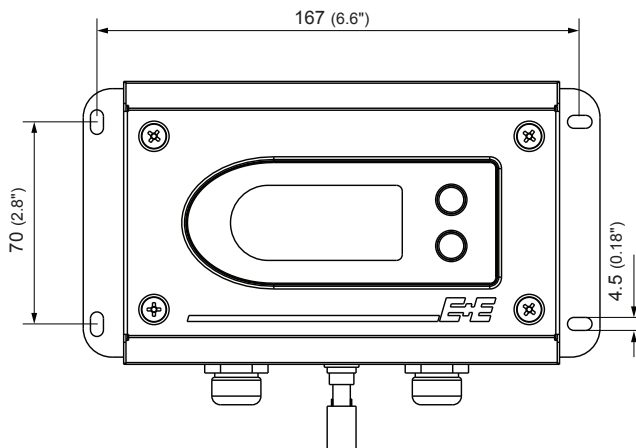
3.2 Housing assembly

The EE300Ex housing has a two-part construction.

- Lower housing section with the connection and earthing terminals.
- Upper housing section with the electronics and measurement probe.



3.2.1 Drilling plan for the housing



The lower housing section is mounted using 4 screws.
Screw diameter < 4.5mm (0.18")



If the upper housing section is removed from the hazard area, e.g. for a calibration, the empty lower section should be protected against dirt and electrostatic charge via a cover HA011401.



Unused cable glands should be sealed using a sealing plug.

3.3 Assembly in category 1 (zone 0 / 20); Division 1



Only intrinsically safe power supply devices are approved to supply EE300Ex in category 1 or Division 1.



In areas belonging to gas group IIC or Class I, Division 1, Group A,B, it must be ensured that during installation and operation, the possibility of impact and friction sparks has been excluded in rarely occurring fault situations.



Work on open transmitter must only be performed if it is guaranteed that no explosive atmosphere is present.



In category 1 or Division 1, the sensor line should be laid in an earthed metallic protective hose. With Group III or Class II, III, ensure that there are no dust or fibers and flyings deposits in the protective tube.



CH1 and CH2 must be galvanically isolated from one another during operation.

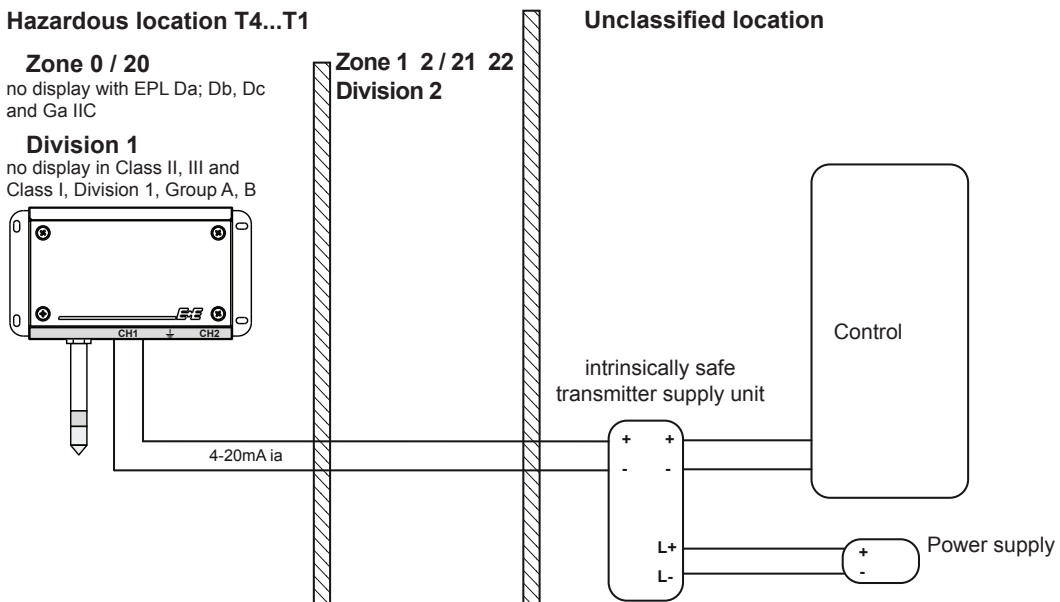


There is no display permitted in the gas hazard area EPL Ga for Group IIC or Class I, Division 1, group A, B and in the dust hazard area for groups IIIA, IIIB and IIIC or Class II, III.

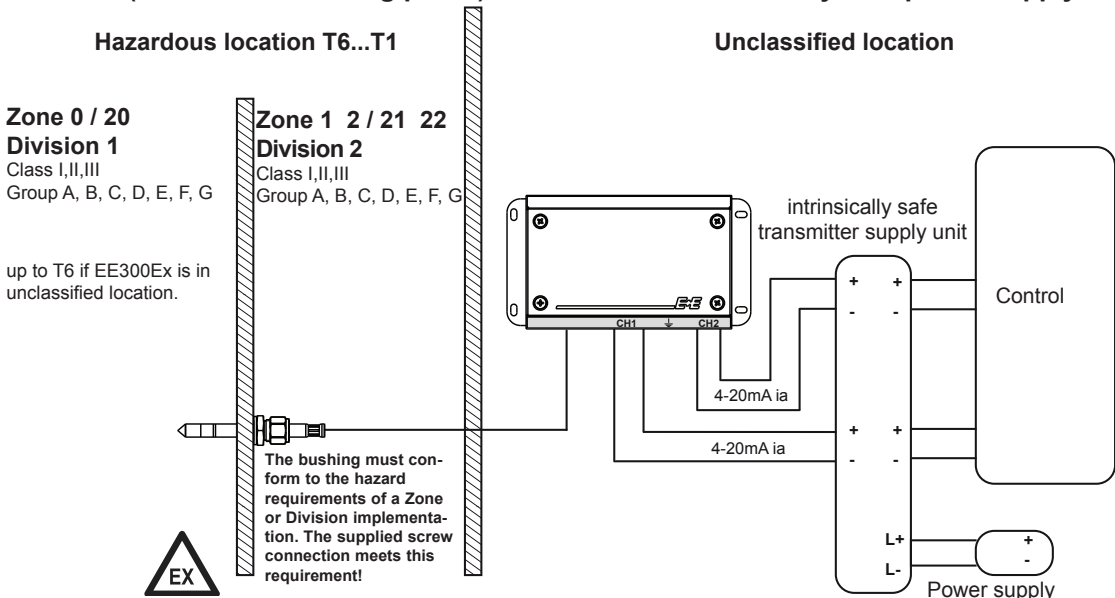


The probe for wall mounting is not permitted to be used for Zone or Division bushing.

EE300Ex (wall mounting) 1 channel via intrinsically safe power supply device:



EE300Ex (with remote sensing probe) 2 channels via intrinsically safe power supply device:



3.4 Assembly in categories 2 and 3 (Zone 1 2 / 21 22), Division 2



Only intrinsically safe power supply devices and protective barriers are approved to supply EE300Ex in category 2 and 3 or Division 2.



No display is permitted in the dust hazard area (Group III) or Class II, III.

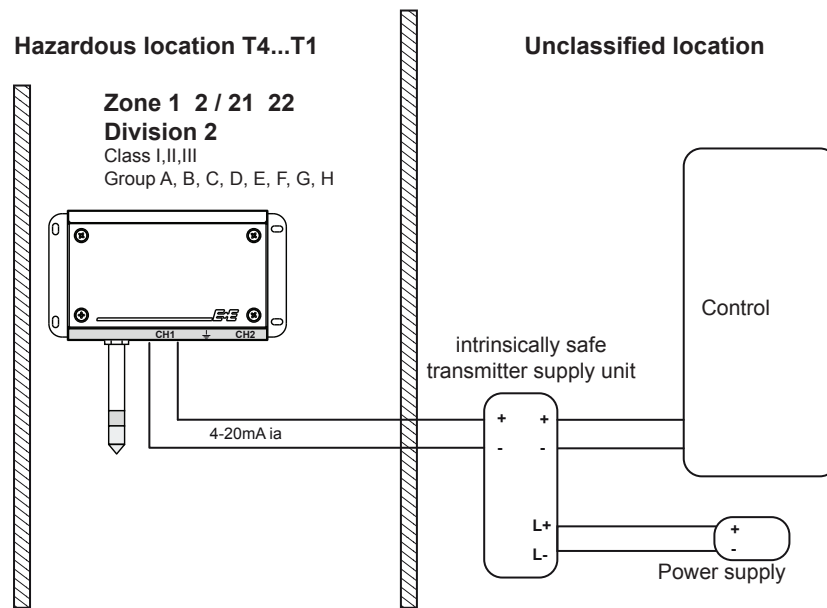


CH1 and CH2 must be galvanically isolated from one another during operation.

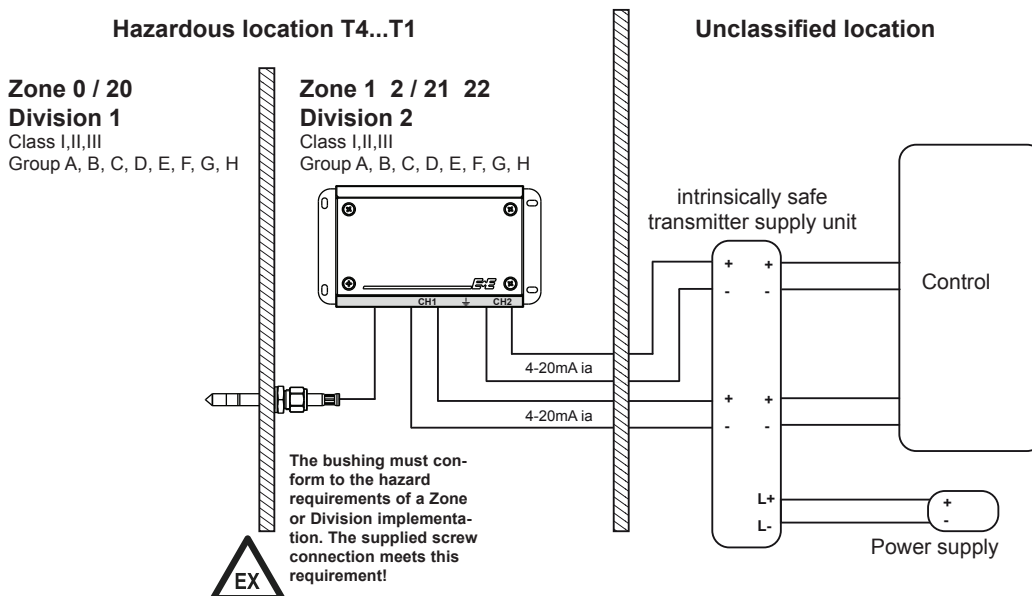


The probe for wall mounting is not permitted to be used for Zone or Division bushing.

EE300Ex (wall mounting) 1 channel via intrinsically safe power supply device:



EE300Ex (with remote sensing probe) 2 channels via intrinsically safe power supply device:



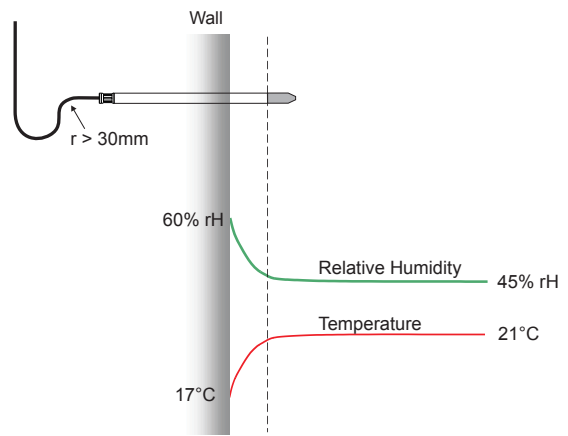
3.5 Mounting the measurement sensor



To mount the transmitter, select a location with stable conditions, i.e. protected against direct sunlight or rain. The measurement probe should be fitted at a location where representative measured values are to be anticipated for the process.

The measurement probe must be mounted horizontally or vertically (downwards). If possible, a drip tray should be placed into position before every installation.

A temperature drop along the measurement sensor should be avoided.



Mechanical ambient conditions

When installing the sensor, the mechanical influences of the installation site should be taken into account. (e.g. vibrations, shock loads via startup processes, temperature fluctuations,...). If the mechanical stability or seal on the probe cannot be ensured, additional mechanical fastening or support should be included.



The probe cable and connection cable should be handled and laid in the hazard area so that no static charges can arise (e.g. metal hose).



Filter caps

The following filter caps ensure sufficient protection against electrostatic discharges relating to explosion group IIB, but are **not** permitted for use in EPL Ga IIC or Class I, Division 1, Group A,B:

- PTFE filter (order code E)
- PTFE filter on metal body (order code K)
- H₂O₂ filter (order code L)

The following filter caps are permitted for use in EPL Ga IIC or Class I, Division 1, Group A,B:

- Stainless steel sinter filter (order code D)
- Stainless steel lattice filter (order code I)
- Oil filter (order code M)

3.5.1 Mounting the clamping ring screw connection



The clamping ring screw connection can be used as Zone or Division bushing. To do this, the screw connection is screwed into the isolating wall and must have a seal tightness of IP67.

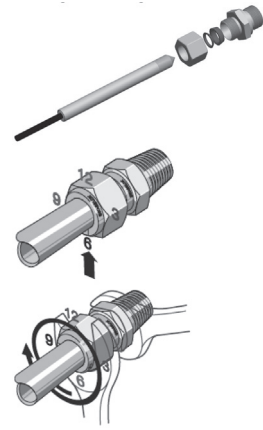


Safety instructions for pressure-tight screw connection:

- The system must not be vented by releasing the union nuts.
- Do not assemble and tighten pipe screw connections if the system is under pressure.
- Always use the correct thread sealant on conical pipe threads.
- Never rotate the screw connection body. Instead, hold the screw connection body securely and turn the union nut.
- Avoid unnecessary disassembly of unused pipe screw connections.

Installation instructions:

- Tighten the union nuts finger-tight.
- Mark the union nuts at the 6 o' clock position.
- Hold the screw connection body tight and tighten the union nuts with 1 ¼ turns to the 9 o' clock position.



Assembly with high pressure applications and applications with a high security factor:

- Tighten the union nuts until the pipe can no longer be turned by hand or can no longer be moved axially in the fitting.
- Mark the union nuts at the 6 o' clock position.
- Hold the screw connection body tight and tighten the union nuts with 1 ¼ turns to the 9 o' clock position.

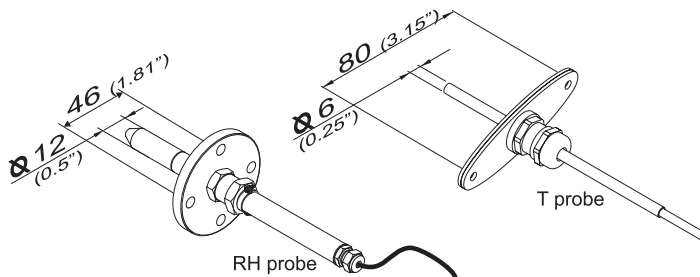
Re-mounting:

- Slide measurement sensor with clamping rings into the fitting as far as it will go.
- Tighten the nut "fingertight", then tighten by approx. a ¼ turn using a spanner.

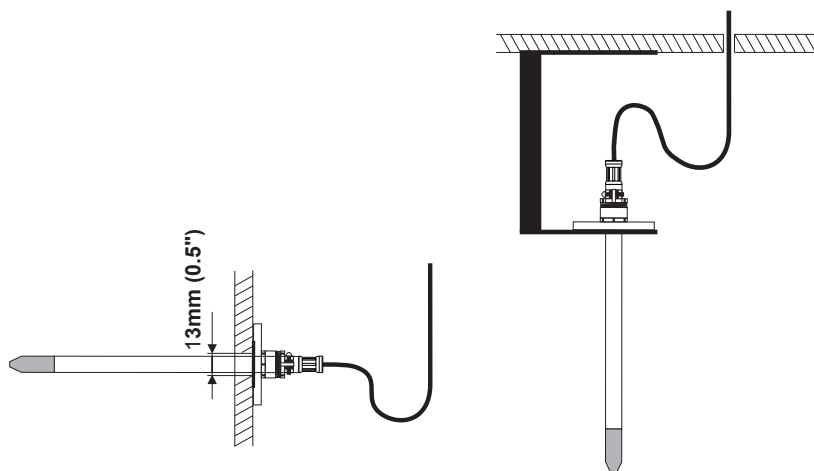
3.5.2 Mounting with mounting flange (optional)



The assembly flange must not be used as Zone or Division bushing, i.e. it must only be used for fastenings and bushings in explosion-hazard areas of the same category.



The measurement sensor must be mounted horizontally or vertically (downwards). If possible, a drip tray should be placed into position before every installation.



Horizontal mounting

Vertical mounting

3.5.3 Mounting the probe using ball valve (optional)

With ball valve mounting, the system being measured does not need to be emptied or brought to a standstill to mount or remove the probe. Install the sensor head against the flow direction.



It is only permitted to use one ball valve that is approved for use in explosion hazard areas.

The process pressure must be below 10bar (145psi).

The two metal sealing rings (see figure) should be replaced each time after being screwed on.

MOUNTING THE PROBE:

The mounting temperature is not permitted to deviate from the usage temperature by more than $\pm 40^{\circ}\text{C}$ (104°F).

- Mount the probe with the ball valve closed.
- Open the ball valve.
- Insert the sensor head through the ball valve into the process. A manual pressing tool is recommended at high pressure.
- To ensure that the probe is securely installed, the closing nut must be tightened at a defined torque of 30Nm. If there is no torque wrench present, tighten the closing nut by hand as far as possible. Turn another $\sim 50^{\circ}$ using a suitable open-ended spanner.



A tightening torque that is too low results in a lower clamping force (fixing force) of the clamp sleeve. There is therefore a risk of injury due to the probe tube being driven out. An excessively high tightening torque can result in the permanent deformation of the clamping sleeve and the probe tube. This makes the removal and re-mounting process more difficult or impossible.

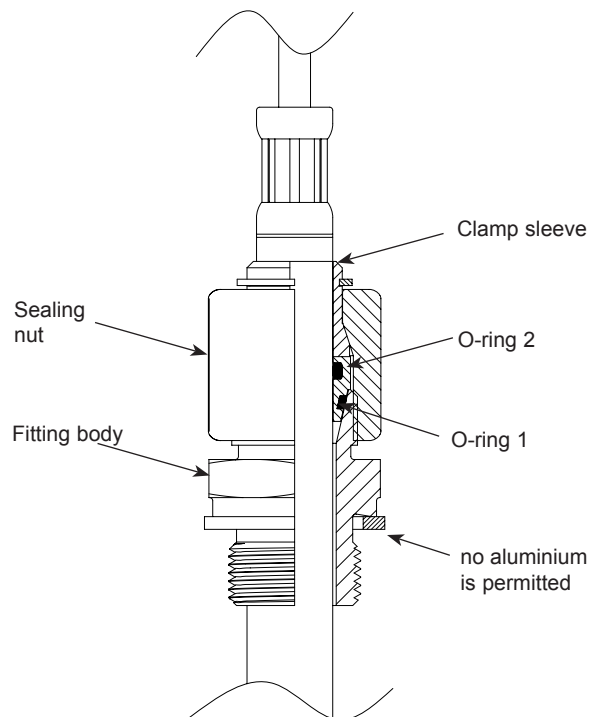
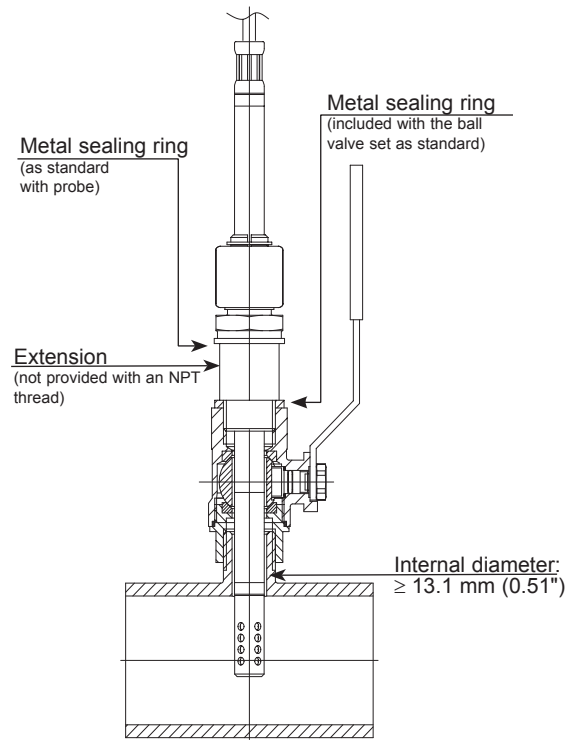
REMOVING THE PROBE:



- Hold the probe tube tight. (Caution: Do not bend the connection cable)
- Slowly unfasten the closing nut using a spanner (spanner size 24) until the drive-out force affects the tube. Never fully remove the closing nut when installed, and instead screw on only as far as possible!
- After the sensor head has been removed from the process as far as it will go, close the ball valve.
- The probe can be fully removed.



Both for mounting and removal, ensure that O-ring 1 is correctly installed. If damaged, O-ring 1 can be replaced by the user.
O-ring type: 13x1.5mm (0.5"x 0.06") - FKM-60
Spare part order no. HA050308



3.5.4 Mounting the probe using sensor retraction tool (optional)



Observe the operating instructions of the sensor retraction tool!
It may only be used the sensor retraction tool ZM-WA-025-040-EST or BG-WA-103-045-EST.
With the sensor retraction tool 250 bar it may only be used the sensor probe model U.

The delivery scope of the sensor probe includes the copper sealing for the Swagelok screw connection.

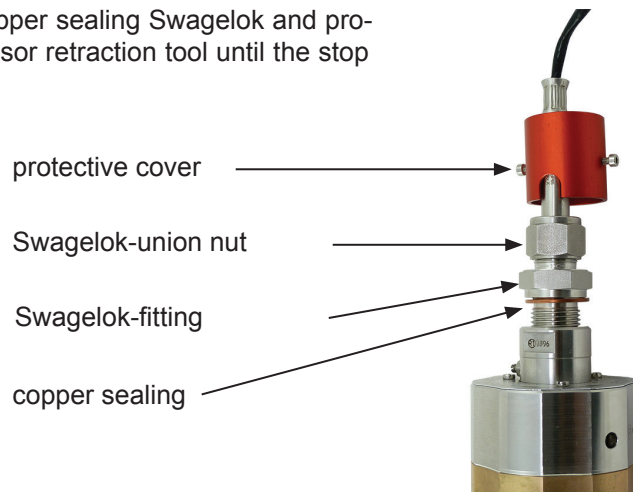


Make sure that the sensor retraction tool is in "SERVICE" position (see manual of the sensor retraction tool).

- Before installing the sensor, dismount the closing plug 1/2" by means of a hexagonal wrench 10 mm and "park" it at the thread hole M10 designed for that purpose.

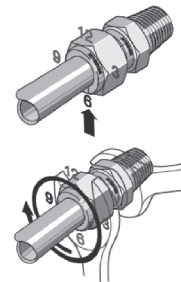


- Insert the sensor with copper sealing Swagelok and protective cover into the sensor retraction tool until the stop position.



- Fasten the Swagelok screw connection 1/2" in the sensor retraction tool with the open-jaw wrench (wrench size 27mm). Do not forget to check the copper sealing!
- At first manually tighten the Swagelok union nut with cutting ring. Now adjust the sensor.

- By means of a screw wrench, tighten the union nut just firmly enough that the screw connection cannot be moved manually any longer.
Mark the union nuts at the 6 o' clock position.



- Hold the screw connection body tight and tighten the union nuts with 1 1/4 turns to the 9 o'clock position.
- To mount the protective cover for the Swagelok protective cover, proceed in the following order:
 - Push the protective cover down to the adjusting device: screws must point to the flat area (wrench size 26mm)
 - Tighten screws M3.

3.6 Calculation of the maximum cable length

Intrinsically safe power supply device STAHL 9160/13-11-11 (order code HA011405)

Technical data for EE300Ex

Supply voltage: $U_{Bin} = 9V + R_L * 0.02A$
Max. current: $I_{out\ max} = 20mA$

Technical data for STAHL 9160/13-11-11

Nominal operating voltage: $U_N = 24V$
Input voltage for transmitter: $U_S = 16V$
Max. load: $R_L = 600\Omega$

Calculation of maximum cable length of intrinsically safe input isolator

Cable $0.75mm^2$ ($0.01in^2$) (example): $R_{cable} = 0.0267\Omega/m$
Load resistance (load): $R_L = 200\Omega$
Input voltage for transmitter: $U_S = 16V$
Min. supply voltage EE300Ex: $U_{Bmin} = 9V + 200\Omega * 0.02A = 13V$
Maximum voltage drop on cable: $U_{cable} = U_S - U_{Bmin} = 16V - 13V = 3V$
Total cable resistance: $R_{cable\ total} = R_{cable} * L_{total} * 2$ (supply and return line)
 $U_{drop} = R_{cable\ total} * I_{out\ max} =$
 $= R_{cable} * L_{total} * 2 * I_{out\ max}$
Transform in accordance with L_{total}
 $L_{total} = U_{drop} / (I_{out\ max} * 2 * R_{cable})$
 $L_{total} = 3V / (0.02A * 2 * 0.0267\Omega/m)$
 $L_{total} = 2800m$ maximum cable length



Caution: this is the max. length without allowing for the intrinsic safety.
(cable capacity and inductivity may reduce the length even further)

3.7 Selecting a suitable power supply device for ATEX Zone concept:

Example for evidence of the intrinsic safety in accordance with EN60079-14:2008 12.2.5.2, EN60079-25:2010 13.1. CH1 and CH2 are galvanically separated, meaning the evidence of the intrinsic safety can only be carried out using appropriate equipment.

Installation assumption:

Installing the EE300Ex (without display) in Zone 0

Connecting cable length: 300m (984ft)
Explosion group: IIC
Temperature class: T4

Both electric circuits laid in one cable.

Intrinsically safe power supply device STAHL 9160/13-11-11 (Excerpt from the EC type approval test certificate)

Certified to:

Ex II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc (certificate number: DMT 03 ATEX E 010 X)
 Ex II (1) D [Ex ia Da] IIC (certificate number: DMT 03 ATEX E 010 X)

Entity parameters:

$U_0 = 27V$
 $I_0 = 88mA$
 $P_0 = 576mW$
 $C_0\ IIC = 90nF$
 $C_0\ IIB = 705nF$
 $L_0\ IIC = 2.3mH$
 $L_0\ IIB = 17mH$

Technical data for connecting cable

Cable type: ÖLFLEX® EB CY from manufacturer Lapp Kabel
 Cable cross-section: 4 x 0.75mm² (0.06x0.01in²)
 Operating capacity: 110nF/km
 Inductivity: 0.65mH/km

Cable capacity for 300m (984ft): CK = 0.3km * 110nF/km = 33nF
 Cable inductivity for 300m (984ft): LK = 0.3km * 0.65mH/km = 0.195mH

Technical data for EE300Ex (extract from the EC type approval test certificate)

Certified to:

II 1 G Ex ia IIC T4 Ga
 II 1 D Ex ia IIIC T80°C Da

Entity parameters:

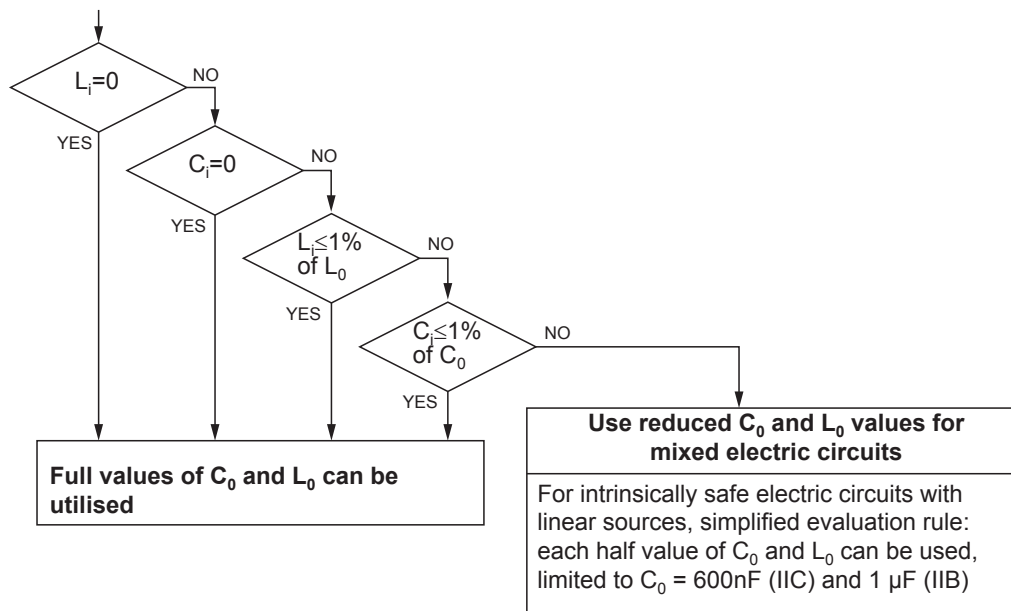
$U_i = 28V$
 $I_i = 100mA$
 $P_i = 700mW$
 $C_i = 2.2nF$
 $L_i = \text{negligibly small}$

Evidence of the intrinsic safety in accordance with EN60079-11:2012 EN60079-25:2010 (Appendix A)

$U_0 = 27V \leq U_i = 28V \rightarrow \text{ok}$
 $I_0 = 88mA \leq I_i = 100mA \rightarrow \text{ok}$
 $P_0 = 576mW \leq P_i = 700mW \rightarrow \text{ok}$
 $C_0 = 90nF \geq 2,2nF + 33nF \rightarrow \text{ok}$
 $L_0 = 2,3mH \geq 0mH + 0,195mH \rightarrow \text{ok}$

Protection level of the intrinsically safe current circuit is met!

Evidence of the intrinsic safety in accordance with EN60079-11:2012, EN60079-25:2010 (Appendix A)



$L_i = \text{negligibly small} \rightarrow \text{no reduced } C_0 \text{ and } L_0 \text{ values required!}$

4. ELECTRICAL CONNECTIONS



It is essential that installation, electrical connection, commissioning, operation and maintenance in explosion hazard areas are only carried out by trained specialist personnel authorised to do so by the system operator.



Installation in accordance with NEC or CEC with consideration of the Control Drawing M1_1309080



For installation in an explosion hazard area, it is essential to ensure that all relevant standards are observed. For the installation, standard EN60079-14, EN60079-25 or IEC60079-14, IEC60079-25 is to be applied, and for repair and maintenance, the standards EN60079-17 or IEC60079-17 and EN60079-19 or IEC60079-19 as well as the relevant national regulations should be applied.



Installation in the U.S. must be carried out in accordance with ANSI / ISA RP 12.6.01-2003 and the National Electrical Code (NEC).
Installation in Canada must be carried out in accordance with the Canadian Electrical Code (CEC).



The EE300Ex is designed as a 2-wire current transmitter.
CH1 should always be connected, CH2 can also be activated if required.
Both outputs are galvanically isolated.



Cable ends must be fitted with the appropriate wire-end sleeves. After the connection in the terminal, an air gap of at least 2mm (0.08") must be left between the strands and a 6mm (0.2") air gap between channels 1 and 2.

Changes to the probe cable length are only permitted to be carried out by the manufacturer (transmitter will need to be re-calibrated).

4.1 Connecting cable



A shielded cable should be used. The shield should be laid on one side with the EE300Ex.



The cable must conform to the following specifications (requirements of EN60079-14, EN60079-25) for ATEX:

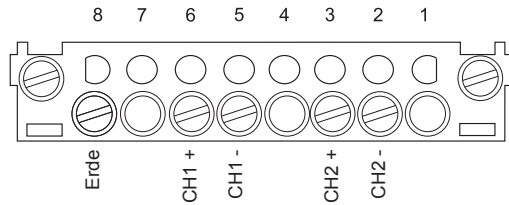
- Maximum cross-section 1.5mm² (0.02in²)
- Single stranded wire diameter: ≥ 0.1mm (0.004")
- Test voltage wire-wire: ≥ 500V AC eff.
- Test voltage wire-shield (if a cable with shield is being used): ≥ 500V AC eff.
- Cable inductivity, cable capacity and conductor resistance are to be evaluated in the evidence of intrinsic safety
- Flame-resistant acc. to IEC60332-1-2

Additional requirements if both channels (CH1, CH2) are connected in a common cable:

- The test voltage wire-wire: must be ≥ 1000V AC eff.
- The radial thickness of the insulation must be ≥ 0.2mm (0.008").
- The conductor insulation must withstand 500V AC eff.

➡ Cable ÖLFLEX® EB CY from manufacturer LAPP KABEL meets this requirement on request.

4.2 Terminal assignment EE300Ex



4.3 Configuration adapter

The digital interface is used only for device configuration and customer adjustment. The configurator software and the drivers are available for download free of charge from our website <http://www.epluse.com/en/service-support/download-center/>.



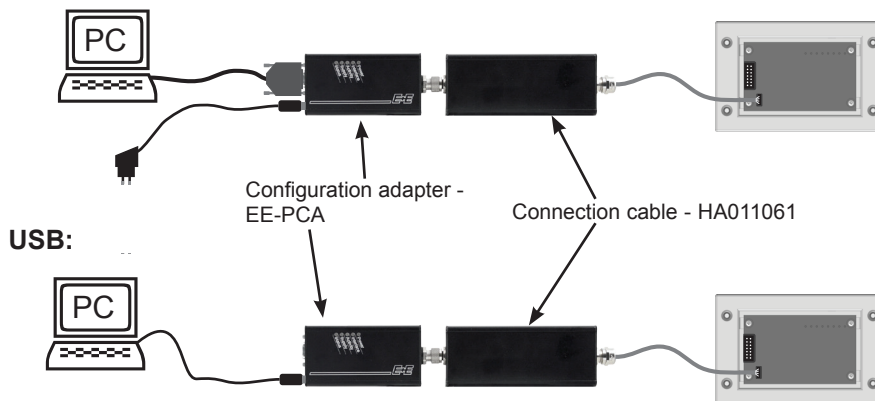
The EE300Ex in combination with the configurator software is only permitted for use outside the hazard area.



It may only be used the cable with protective circuit (aluminum housing on the 8 pin connector).

Connection from CH1 is NOT required for communication.

RS232 (the external power supply required is included as standard with the configuration adapter):



If the upper housing section of the EE300Ex with the electronics and measurement probe is removed, the lower housing section with the blanking plate (HA011401) should be sealed to protect against dirt and electrostatic charge.

4.4 Calibration of the current loop



Only appropriately approved multimeters are permitted for calibration in hazardous areas. During measurement with these multimeters, ensure that the requirements of the system description (proof of intrinsic safety) remain in force.

4.5 Grounding and potential equalization



The EE300Ex must be integrated into the potential equalization to avoid hazards from electrostatic charges. It shall apply the requirements of the standards EN60079-14, EN60079-25 or IEC60079-14, IEC60079-25. With a remote sensing probe, the probe should also be integrated with the screw connection with a maximum of 1 MΩ in the potential equalization.



The ground conductor or the potential equalization connection must have a cross-section of 4mm² (0.06in²) for the external earthing. With stranded wires, the cable ends should be fitted with suitable wire-end sleeves.

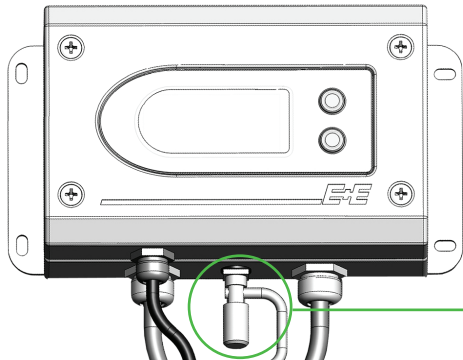


Intrinsically safe barrier ground must be less than 1 ohm.



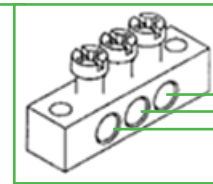
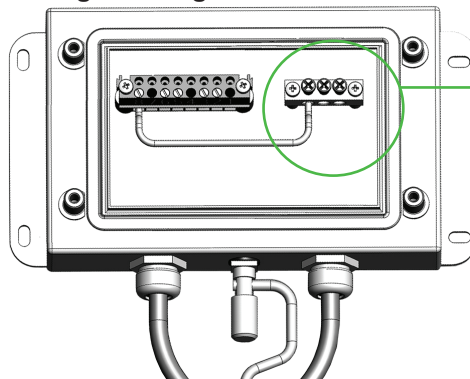
For installation in the U.S. internal earthing should be used. The wire cross-sectional must be in accordance with NEC Section 250.122.

External grounding:



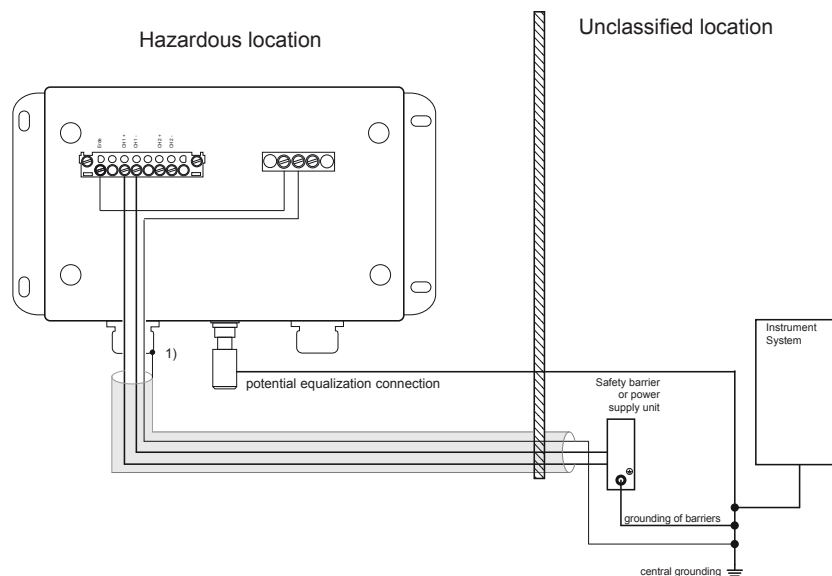
Cable cross-section maximum 4mm² (0.06in²)

Internal grounding:

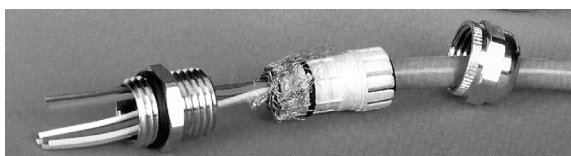


Grounding connection channel 1
Grounding connection channel 2
Grounding connection occupied

Cable cross-section maximum 10 mm² (0.2in²)



1)

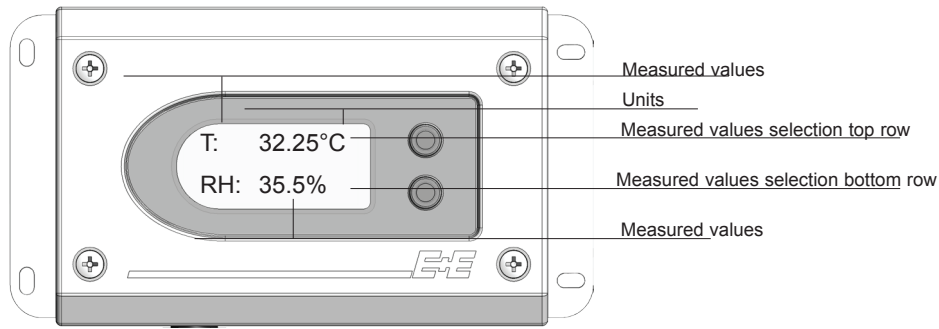


The braided screen should be turned back via the plastic insert on the cable connection. The introduction of the plastic insert presses the braided screen onto the interior wall of the metallic part.

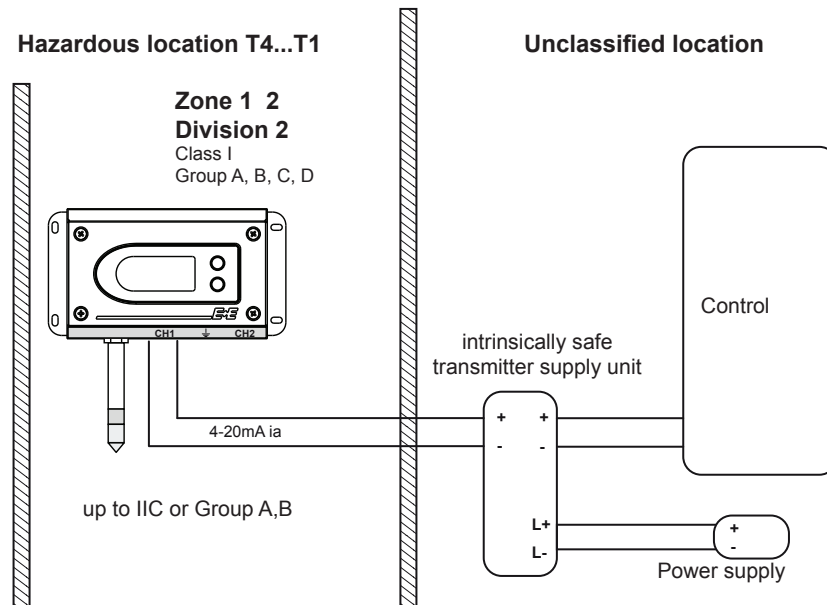
5. DISPLAY (OPTIONAL)



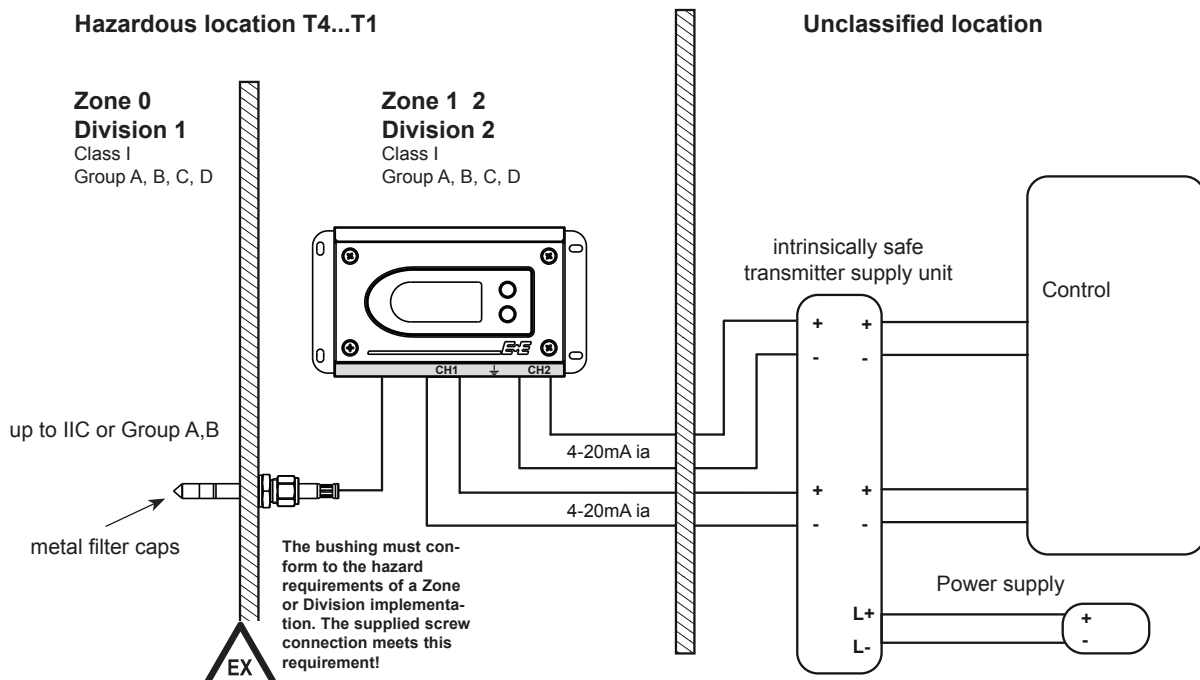
There is no display permitted in the gas hazard area for EPL Ga IIC or Class I, Division 1, Group A, B and in the dust hazard area for IIIA, IIIB and IIIC or Class II, III.



Example of EE300Ex wall mounting in Zone 1 or 2 or Division 2



Example of EE300Ex mounting of remote sensing probe in Zone 0 or Division 1 and transmitter in Zone 1 or 2 or Division 2



6. MAINTENANCE



It is essential that operation and maintenance in explosion hazard areas are only carried out by trained specialist personnel authorised to do so by the system operator.



For maintenance and repair work in explosion hazard areas, the standards EN60079-17 or IEC60079-17, EN60079-19 or IEC60079-19 and the relevant national regulations must be applied.



In the U.S. maintenance and inspection must be carried out in accordance with ANSI / ISA RP12.6.01-2003 and the NEC.

In Canada maintenance and inspection must be carried out in accordance with CEC

6.1 Filter replacement



The protective filter should be cleaned or replaced periodically, in particular whenever it has been noted that the response time has become longer.

When replacing a filter, ensure that the sensor is NOT touching the metallic filter cap!

6.2 Cleaning

6.2.1 Cleaning the display



To clean the display screen, use a damp cloth to avoid static.

6.2.2 Cleaning the sensor

Thanks to the very robust design of the sensor element, any cleaning required is very easy to carry out. This can be carried out using suitable chemicals such as isopropyl alcohol (normal industrial product). After cleaning in isopropyl alcohol, dip the sensor element in water and allow to dry. The cleaning time should not be more than 2 mins. To avoid damaging the sensor layer, the use of mechanical equipment is not permitted!



When screwing on the filter cap, ensure that the sensor is NOT touching the metallic filter cap!

6.3 Customer adjustment of humidity and temperature

See manual EE-PCS (product configuration software)

6.4 Display error messages

Self diagnosis via display (if available):

Error 1 → Humidity sensor element damaged

Error 2 → Humidity sensor element condensation

Error 3 → Temperature Sensor element damaged

Error 4 → Temperature sensor element short circuit

6.5 Ordering information for accessories

Designation

Stainless steel sinter filter

PTFE filter

Filter for moisture measurement in oil

Stainless steel lattice filter

Ball valve ISO 1/2" interior thread with ATEX approval

Configuration adapter for connection to the PC

Connection cable with protective circuit

between EE300Ex and configuration adapter

Blanking plate for lower housing part

Protective barrier STAHL 9002/13-280-093-001

Intrinsically safe 1-channel power supply device STAHL 9160/13-11-11

Intrinsically safe 2-channel power supply device STAHL 9160/23-11-11

Sealing plug for unused cable screw connection - M16 (8mm (0.31"))

Order code

HA010103EX

HA010105

HA010110

HA010109

HA011403

EE-PCA

HA011061

HA011401

HA011410

HA011405

HA011406

HA011402

Sealing plug for unused cable screw connection - M20 (12mm (0.47"))	HA011404
Mounting flange 12mm (0.24")	HA010201
Mounting flange 6mm (0.24")	HA010207
1/2" ISO screw connection 12mm (0.47")	HA011102
1/2" NPT screw connection 12mm (0.47")	HA011103
1/2" welded connection 12mm (0.47")	HA011109
1/2" ISO screw connection 6mm (0.24")	HA011104
1/2" NPT screw connection 6mm (0.24")	HA011105
O-ring for sliding fitting	HA050308
sensor retraction tool 250 bar	ZM-WA-025-040-EST
sensor retraction tool 40 bar	BG-WA-103-045-EST

7. TECHNICAL DATA - EE300EX-HT

Measuring values

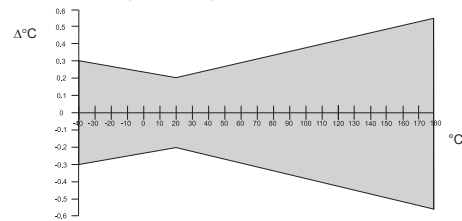
Relative humidity

Humidity sensor ¹⁾	HC1000
Measuring range ¹⁾	0...100% RH
Accuracy ²⁾ (including hysteresis, non-linearity and repeatability, traceable to international standards, administrated by NIST, PTB, BEV...)	
-15...40°C (5...104°F) ≤90% RH	± (1.3 + 0.3%*mv) % RH
-15...40°C (5...104°F) >90% RH	± 2.3% RH
-25...70°C (-13...158°F)	± (1.4 + 1%*mv) % RH
-40...180°C (-40...356°F)	± (1.5 + 1.5%*mv) % RH
Temperature dependence electronics	typ. 0.03% RH/°C
Response time with filter at 20°C (68°F) / t ₉₀	< 30 sec.

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: -40...180°C (-40...356°F)

Accuracy



Temperature dependence of electronics typical 0.005 °C/°C

Max. selectable Scaling Range

		from	to		unit
			wall mounting	remote sensing probe	
Dew/Frost point temp.	Td	-40 (-40)	60 (140)	100 (212)	°C (°F)
Wet bulb temperature	Tw	0 (32)	60 (140)	100 (212)	°C (°F)
Water vapour pressure	e	0 (0)	200 (3)	1100 (15)	mbar (psi)
Mixing ratio	r	0 (0)	425 (2900)	999 (9999)	g/kg (gr/lb)
Absolute humidity	dv	0 (0)	150 (60)	700 (300)	g/m ³ (gr/ft ³)
Specific enthalpy	H	-50 (-15000)	400 (150000)	2800 (999999)	kJ/kg (Btu/lb)
Water activity	aw	0	-	1	[]
Water content	x	0	-	100000	[ppm]

Outputs

freely selectable and scalable outputs 2 x 4 - 20 mA (2-wire) galvanically isolated R_L=(V_{cc}-9V)/20mA
Output 1 (CH1) must be connected!

General

Supply voltage	V _{cc min} =(9+R _L *0.02)VDC V _{cc max} =28VDC
Current consumption	max 20mA per channel
Pressure range for pressure tight sensor probe	refer to model
Serial interface for communication ³⁾	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") M20 for cable diameter 10 - 14 mm (0.4 - 0.55")
Electrical connection	screw terminals max. 1.5 mm ² (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
Probe (without Filter)	Stainless Steel

1) Refer to the working range of the humidity sensor.

2) 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).

3) Configuration adapter EE-PCA and cabel HA011061 necessary.

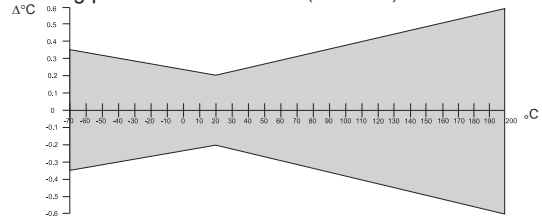
8. TECHNICAL DATA - EE300EX-xT

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

General

Supply voltage	$V_{CC\ min} = (9 + R_L * 0.02) VDC$ $V_{CC\ max} = 28VDC$	
Current consumption	max 20mA	
Pressure range for pressure tight sensor probe	0.1 ... 20bar (1.5...300psi)	
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") M20 for cable diameter 10 - 14 mm (0.4 - 0.55")	
Electrical connection	screw terminals max. 1.5 mm ² (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 cabel HA011061 necessary.



9. ATEX CERTIFICATE

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ CERTIFICADO ◆ CERTIFICAT



Product Service

(1) **EC Type Examination Certificate**

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**

(3) EC Type Examination Certificate Number:

TPS 13 ATEX 38892 003 X



(4) Equipment: Humidity and Temperature Transmitter Type: EE300Ex

(5) Manufacturer: E+E Elektronik Ges.m.b.H.

(6) Address: Langwiesen 7, 4209 Engerwitzdorf, Austria

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) TÜV SÜD Product Service GmbH, notified body No. 0123 in accordance with Article 9 of the Council Directive 94/9/EC of March 23rd 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II of the Directive.
The examination and test results are recorded in the confidential report 71386133

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 1127-1:2011

EN 60079-11:2007

EN 60079-0:2009

EN 61241-11:2006

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC Type Examination Certificate relates only to the design and the construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

Equipment: II 1G Ex ia IIC T4 Ga II 1D Ex ia IIIC T 70°C Da IP65

Equipment with Display: II 2 G Ex ia IIC T4 Gb II 1G Ex ia IIB T4 Ga

Sensor: II 1G Ex ia IIC T6 Ga II 1D Ex ia IIIC T 70°C Da IP65

Certification body

Stuttgart, 05.03.2013

Andres Pfeil

Page 1 / 3

EC Type Examination Certificate without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail.
(Document no.: TPS 13 ATEX 38892 003 X)

The document is internally administrated under the following number: EX5 13 02 38892 003



Product Service

Schedule

(13)

(14) **EC Type Examination Certificate TPS 13 ATEX 38892 003 X**

(15) Description of equipment:

The humidity and temperature transmitter EE300Ex is dedicated for use in industrial applications. The transmitter is available as a fixed install or with remote sensing probe. The EE300Ex transmitter is to be powered by an intrinsically safe power source.

Technical and electrical data:

Transmitter EE300Ex	Kenndaten
Input voltage (Ui)	28 V
Input power (Pi)	700 mW
Input current (Ii)	100 mA
Input capacitance (Ci)	2,2 nF
Input inductance (Li)	negligible small
protection category of equipment	IP65
Temperature range electronics	-40 ≤ Tamb ≤ +60°C
Temperature range for humidity and temperature probe	-40 ≤ Tamb ≤ +180°C
Temperature range for temperature probe	-70 ≤ Tamb ≤ +200°C

(16) Test report: 71386133

(17) Special conditions for safe use:

The EE300Ex transmitter with display may not be used in areas with explosive dust (IIIA, IIIB, IIIC).

The EE300Ex transmitter may only be operated with safety barriers.

In case of using both measurement channels, each channel must be driven separately via their own galvanic safety barriers.

For the use of the EE300Ex transmitter with remote probe in explosive area zone 0 the probe cable must be installed in a metallic, grounded protective tube.

The plastic filter-cap may not be used in explosive area zone 0 with chemicals of the explosion group IIC.

Page 2 / 3

EC Type Examination Certificate without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail.
(Document no.: TPS 13 ATEX 38892 003 X)

The document is internally administrated under the following number: EX5 13 02 38892 003




Product Service

The EE300Ex transmitter with the connector option may not be used in areas with explosive dust (IIIA, IIIB, IIIC) and in explosive area zone 0 with chemicals of the explosion group IIC.

- (18) Essential health and safety requirements:
met by standards

Certification body


Andreas Pfeil

Stuttgart, 05.03.2013



Page 3 / 3

EC Type Examination Certificate without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail.

(Document no.: TPS 13 ATEX 38892 003 X)

The document is internally administrated under the following number: EX5 13 02 38892 003



Product Service

1. Supplement to the EC Type Examination Certificate

(1) EC Type Examination Certificate Number:

TPS 13 ATEX 38892 003 X



(2) Equipment: Humidity and Temperature Transmitter Type: EE300Ex

(3) Manufacturer: E+E Elektronik Ges.m.b.H.

(4) Address: Langwiesen 7, 4209 Engerwitzdorf, Austria

(5) Description: The humidity and temperature transmitter EE300Ex is dedicated for use in industrial applications. The transmitter is available with fix installed or with remote sensing probe.
 The humidity and temperature transmitter must be powered by an intrinsically safe power source, which shall be compatible with EE300Ex according to the entity concept.
 EE300Ex configuration and adjustment can be done using the E+E Product Configuration Adapter HA011061

(6) Supplement: Standard update to EN 60079-11:2012; Specification of temperature working range for the combined humidity and temperature probe and for the temperature probe.

Test 1: Total immersion in dust according to EN 60079-11:2012 paragraph 5.6.5

Test 2: Requirements for the E+E Product Configuration Adapter type HA011061 according to EN 60079-11:2012

Test 3: Approval of the silicone foam gasket for the enclosure

(7) Test results: The examination and test results are recorded in the confidential reports 713031470, 713030081 and 713038637.

(8) The compliance with the Essential Health and Safety Requirements is fulfilled according to:

EN 1127-1:2011

EN 60079-11:2012

EN 60079-0:2012

Page 1 / 2

EC Type Examination Certificate without signature and official stamp shall not be valid.

The certificates may be circulated only without alteration.

Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. (Document no.: TPS 13 ATEX 38892 003 X)

The document is internally administrated under the following number: EX5 13 01 38892 003

TÜV SÜD Product Service GmbH · Zertifizierstelle · Ridlerstraße 65 · 80339 München · Germany





Product Service

Working temperature range for the probes:

Specification of the temperature class „TKG“ for use in gas area exposed to explosion hazards and „TKD“ for use in dust area exposed to explosion hazards as a function of the ambient temperature “Tamb” for the humidity and temperature probe and the temperature probe:

TKG	TKD	Humidity and Temperature Probe	TKG	TKD	Temperature Probe
T6	80°C	-40°C ≤ Tamb ≤ +60°C	T6	80°C	-70°C ≤ Tamb ≤ +60
T5	95°C	-40°C ≤ Tamb ≤ +75°C	T5	95°C	-70°C ≤ Tamb ≤ +75°C
T4	130°C	-40°C ≤ Tamb ≤ +110°C	T4	130°C	-70°C ≤ Tamb ≤ +110°C
T3	195°C	-40°C ≤ Tamb ≤ +175°C	T3	195°C	-70°C ≤ Tamb ≤ +175°C
T2	200°C	-40°C ≤ Tamb ≤ +180°C	T2	220°C	-70°C ≤ Tamb ≤ +200°C
T1	200°C	-40°C ≤ Tamb ≤ +180°C	T1	220°C	-70°C ≤ Tamb ≤ +200°C

(9) The mark of the equipment shall include the following:

Equipment: II 1G Ex ia IIC T4 Ga II 1D Ex ia IIIC T 80°C Da

Equipment with Display: II 2G Ex ia IIC T4 Gb II 1G Ex ia IIB T4 Ga

Sensor: II 1G Ex ia IIC T6-T1 Ga II 1D Ex ia IIIC T 80°C...220°C Da

(10) Additional special conditions for safe use:

The EE300Ex transmitter with display may not be used in areas with explosive dust (IIIA, IIIB, IIIC) and in gas explosive area zone 0 with group IIC.

To prevent electrostatic charges the remote probe body must be earthed with maximum 1MΩ.

If EE300Ex is located outside the explosive area, following parameters apply:

For connection at plug X47, pin 2,3,4 against pin 1:

maximum voltage: Um = ± 28 V

maximum current: Im = ± 100 mA

or alternatively

connection via E+E Product Configuration Adapter HA011061.

(Certification Body for Explosion Protection)

Michael Reuschel



Filderstadt, 28.04.2014

Page 2 / 2

EC Type Examination Certificate without signature and official stamp shall not be valid.

The certificates may be circulated only without alteration.

Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. (Document no.: TPS 13 ATEX 38892 003 X)

The document is internally administrated under the following number: EX5 13 01 38892 003

TÜV SÜD Product Service GmbH · Zertifizierstelle · Ridlerstraße 65 · 80339 München · Germany

TÜV®

10. EC DECLARATION OF CONFORMITY



EU - DECLARATION OF CONFORMITY (According to ISO/IEC 17050-1)

Product(s) Type	From Version:	Measure:	Output signal:
EE300Ex-HTyyy EE300Ex-xTyyy yyy order code	201107_1 201108_1 201115_1	humidity / dewpoint / water activity / temperature	4-20mA



CE 0123

E+E ELEKTRONIK Ges.m.b.H
Langwiesen7
4209 Engerwitzdorf / AUSTRIA

EC-TYPE-EXAMINATION CERTIFICATE:

TPS 13 ATEX 38892 003 X

EE300Ex without display: II 1G Ex ia IIC T4 Ga II 1D Ex ia IIIC T80°C Da
 EE300Ex with display: II 2G Ex ia IIB T4 Gb II 1G Ex ia IIC T4 Ga
 EE300Ex remote probe: II 1G Ex ia IIC T6-T1 Ga II 1D Ex ia IIIC T80°C...220°C Da

The EC-Type-Examination was issued by TÜV SÜD Product Service GmbH (notified body No 0123), Ridlerstraße 65, 80339 München / Germany.

We declare under our sole responsibility that these products (see product table above) correspond to the following regulations and their subsequent modifications:


Directive Ref.	Directive area
2014/30/EU	Electromagnetic compatibility
2014/34/EU	Equipment and protective systems in potentially explosive atmospheres
2011/65/EU	RoHS

The products conform with the following standards or standardized documents:

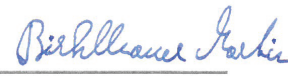
Standard	Year of ratification	Standard	Year of ratification
EN 1127-1	2011	EN 61326-1	2013
EN 60079-0	2012 / A11:2013	EN 61326-2-3	2013
EN 60079-11	2012	EN 50581	2012

Designed for use in industrial environment.
Affixing of the CE marking (for the first time): 2013

Test Report: Conformity_EE300Ex_03.docx
Modification:Directive update


DI Timelthaler Wolfgang
(business manager)

Engerwitzdorf, April 20th, 2016


Birklbauer Martin
(Ex-authorized person)

File: Declaration of conformity EE300Ex_02.docx

11. IECEx CERTIFICATE OF CONFORMITY - COC

for more information see <http://www.iecex.com/>
or our website <http://www.epluse.com/ee300ex>

12. FM CERTIFICATE USA

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM17US0302X
3. **Equipment:** EE300Ex-series
(Type Reference and Name) Humidity and Temperature Transmitter
4. **Name of Listing Company:** E+E ELEKTRONIK Ges.m.b.H
5. **Address of Listing Company:** Langwiesen 7
Engerwitzdorf 4209
Austria

6. The examination and test results are recorded in confidential report number:

3049300 dated 2nd October 2017

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2011, FM Class 3610:2015, FM Class 3611:2016, FM Class 3810:2005,
ANSI/ISA 61010-1:2012, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-11:2014, ANSI/IEC 60529:2004

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. **Equipment Ratings:**

Intrinsically Safe for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G hazardous (classified) locations in accordance with drawing M1_1309080, Nonincendive for Class I, II, III Division 2, Groups A, B, C, D, E, F, and G hazardous (classified) locations, Intrinsically Safe for Class I, Zone 0, Group IIC hazardous (classified) locations in accordance with drawing M1_1309080, Intrinsically Safe for Class II and III, Zone 20, Group IIIC hazardous (classified) locations in accordance with drawing M1_1309080, IP65 with an ambient temperature

Certificate issued by:


J. E. Marquedant
VP, Manager, Electrical Systems

30 November 2017
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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SCHEDULE



US Certificate Of Conformity No: FM17US0302X

rating of -40°C to +60°C.

11. The marking of the equipment shall include:

Equipment Group I: EE300Ex without display

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T4 Ta = -40°C to +60°C; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T4 Ta = -40°C to +60°C

Class I, Zone 0, AEx ia IIC T4 Ta = -40°C to +60°C Ga; Entity – M1_139080; IP65

Zone 20, AEx ia IIIC T131°C Ta = -40°C to +60°C Da; Entity – M1_139080; IP65

Remote Probe:

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T6...T1; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T6...T1

Class I, Zone 0, AEx ia IIC T6...T1 Ga; Entity – M1_139080; IP65

Zone 20, AEx ia IIIC T80°C Da; Entity – M1_139080; IP65

Equipment Group II: EE300Ex with display

Class I, Division 1, Groups C, and D; T4 Ta = -40°C to +60°C; Entity – M1_139080

Class I, Division 2, Groups A, B, C and D; T4 Ta = -40°C to +60°C; Entity – M1_139080

Class I, Zone 0, AEx ia IIB T4 Ta = -40°C to +60°C Ga; Entity – M1_139080

Class I, Zone 1, AEx ia IIC T4°C Ta = -40°C to +60°C Gb; Entity – M1_139080

Remote Probe:

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T6...T1; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T6...T1

Class I, Zone 0, AEx ia IIC T6...T1 Ga; Entity – M1_139080; IP65

Zone 20, AEx ia IIIC T80°C Da; Entity – M1_139080; IP65

12. **Description of Equipment:**

General - The EE300Ex transmitter is designed for gauge measurements of temperature and humidity in air. All signal outputs are available on two 4 to 20 mA analog outputs.

Construction - The EE300Ex transmitter consists of a single compartment electronics housing. The enclosure is of stainless steel and has an integrated or remote humidity and/or temperature sensor.

The EE300Ex transmitter is designed for use with the Product Configuration Adapter (PCA) HA011061 in non-hazardous locations for software configuration.

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US Certificate Of Conformity No: FM17US0302X

Ratings - The EE300Ex transmitter operates at 6.4-28 Vdc (700mW). The transmitters are rated for use in an ambient temperature range of -40°C to +60°C. The transmitter probe is rated for use in a process temperature range of -70°C to +200°C.

Equipment Group I: EE300Ex without display

EE300EX-HT6SAxxxxbcFMde

- a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- b = Filter; C, D, E, I, J, K, L or M
- c = Sensor Protection; x or 1
- d = Special option; Blank or Gx
- e = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-HT6SaxbcdefgFMhi

- a = Model; E, M, S or U
- b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- c = Probe – Cable Length; A, B, C, E, F, G or H
- d = Probe Length; C, D, F, G, H, J, K or L
- e = Zone Feedthrough (probe fitting): x, A, B, C, F, H or D
- f = Filter; C, D, E, I, J, K, L or M
- g = Sensor Protection; x or 1
- h = Special option; Blank or Gx
- i = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-40°C < Ta < 60°C
T5	-40°C < Ta < 75°C
T4	-40°C < Ta < 110°C
T3	-40°C < Ta < 175°C
T2	-40°C < Ta < 180°C
T1	-40°C < Ta < 180°C

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US Certificate Of Conformity No: FM17US0302X

EE300EX-xT6SAxxxxFMB

a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 b = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	Li	Ci
CH 1: + and -	6.4Vdc ≤ U _i ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ U _i ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-xT6SaxbcdeFMf

a = Model; H
 b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 c = Probe – Cable Length; A, B, C, E, F, G or H
 d = Probe length; E
 e = Zone Feedthrough (probe fitting): x, I or J
 f = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	Li	Ci
CH 1: + and -	6.4Vdc ≤ U _i ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ U _i ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-70°C < T _a < 60°C
T5	-70°C < T _a < 75°C
T4	-70°C < T _a < 110°C
T3	-70°C < T _a < 175°C
T2	-70°C < T _a < 200°C
T1	-70°C < T _a < 200°C

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US Certificate Of Conformity No: FM17US0302X

Equipment Group II: EE300Ex with display

EE300EX-HT6SADaxxbcFMde

- a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- b = Filter; C, D, E, I, J, K, L or M
- c = Sensor Protection; x or 1
- d = Special option; Blank or Gx
- e = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-HT6SaDbcdefgFMhi

- a = Model; E, M, S or U
- b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- c = Probe – Cable Length; A, B, C, E, F, G or H
- d = Probe Length; C, D, F, G, H, J, K or L
- e = Zone Feedthrough (probe fitting): x, A, B, C, F, H or D
- f = Filter; C, D, E, I, J, K, L or M
- g = Sensor Protection; x or 1
- h = Special option; Blank or Gx
- i = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-40°C < T _a < 60°C
T5	-40°C < T _a < 75°C
T4	-40°C < T _a < 110°C
T3	-40°C < T _a < 175°C
T2	-40°C < T _a < 180°C
T1	-40°C < T _a < 180°C

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US Certificate Of Conformity No: FM17US0302X

EE300EX-xT6SADaxxxFMb

a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 b = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	Imax or li	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-xT6SaDbcdeFMf

a = Model; H
 b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 c = Probe – Cable Length; A, B, C, E, F, G or H
 d = Probe length; E
 e = Zone Feedthrough (probe fitting): x, I or J
 f = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	Imax or li	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-70°C < Ta < 60°C
T5	-70°C < Ta < 75°C
T4	-70°C < Ta < 110°C
T3	-70°C < Ta < 175°C
T2	-70°C < Ta < 200°C
T1	-70°C < Ta < 200°C

13. Specific Conditions of Use:

Equipment Group I: EE300Ex without display

1. Filter options C, E, J, K and L are not allowed in Groups A or B for Division 1 and EPL Ga IIC for Zone 0.
2. The EE300Ex Remote Probe is approved for in air applications only.
3. The serial software configuration port of the EE300EX may only be used with the Product Configuration Adapter HA011061.

Equipment Group II: EE300Ex with display

1. The EE300Ex Remote Probe is approved for in air applications only.
2. The serial software configuration port of the EE300EX may only be used with the Product Configuration Adapter HA011061.

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US Certificate Of Conformity No: FM17US0302X

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
2 nd October 2017	Original Issue.
30 th November 2017	<u>Supplement 2:</u> Report Reference: – RR211141 datwed 30 th November 2017. Description of the Change: Updated standard editions to the latest revisions, added options for electrical connections, added option for probe fitting and converted certificate to new format.

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13. FM CERTIFICATE CANADA



CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**

2. **Certificate No:** FM17CA0154X
3. **Equipment:** EE300Ex-series
(Type Reference and Name) Humidity and Temperature Transmitter
4. **Name of Listing Company:** E+E ELEKTRONIK Ges.m.b.H
5. **Address of Listing Company:** Langwiesen 7
Engerwitzdorf 4209
Austria

6. The examination and test results are recorded in confidential report number:

3049300 dated 2nd October 2017

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA-C22.2 No. 0-M91:R2006, CSA-C22.2 No. 142-M1987:R2004, CSA-C22.2 No. 157-92:2016,
CSA-C22.2 No. 213:2015, CSA-C22.2 No. 60529:R2010, CAN/CSA-C22.2 No. 60079-0:2015,
CAN/CSA-C22.2 No. 60079-11:2014, CAN/CSA-C22.2 No. 61010-1:2012

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. Equipment Ratings:

Intrinsically Safe for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G hazardous locations in accordance with drawing M1_1309080, Nonincendive for Class I, II, III Division 2, Groups A, B, C, D, E, F, and G hazardous locations, Intrinsically Safe for Class I, Zone 0, Group IIC hazardous locations in accordance with drawing M1_1309080, Intrinsically Safe for Class II and III, Zone 20, Group IIIC hazardous locations in accordance with

Certificate issued by:



J.E. Marquedant
VP, Manager, Electrical Systems

30 November 2017

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Canadian Certificate Of Conformity No: FM17CA0154X

drawing M1_1309080, IP65 with an ambient temperature rating of -40°C to +60°C.

11. The marking of the equipment shall include:

Equipment Group I: EE300Ex without display

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T4 Ta = -40°C to +60°C; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T4 Ta = -40°C to +60°C

Zone 0, Ex ia IIC T4 Ta = -40°C to +60°C Ga; Entity – M1_139080; IP65

Zone 20, Ex ia IIC T131°C Ta = -40°C to +60°C Da; Entity – M1_139080; IP65

Remote Probe:

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T6...T1; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T6...T1

Zone 0, Ex ia IIC T6...T1 Ga; Entity – M1_139080; IP65

Zone 20, Ex ia IIC T80°C Da; Entity – M1_139080; IP65

Equipment Group II: EE300Ex with display

Class I, Division 1, Groups C, and D; T4 Ta = -40°C to +60°C; Entity – M1_139080

Class I, Division 2, Groups A, B, C and D; T4 Ta = -40°C to +60°C; Entity – M1_139080

Zone 0, Ex ia IIB T4 Ta = -40°C to +60°C Ga; Entity – M1_139080

Zone 1, Ex ia IIB T4 Ta = -40°C to +60°C Gb; Entity – M1_139080

Remote Probe:

Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T6...T1; Entity – M1_139080; IP65

Class I, II, III, Division 2, Groups A, B, C, D, E, F and G; T6...T1

Zone 0, Ex ia IIC T6...T1 Ga; Entity – M1_139080; IP65

Zone 20, Ex ia IIC T80°C Da; Entity – M1_139080; IP65

12. **Description of Equipment:**

General - The EE300Ex transmitter is designed for gauge measurements of temperature and humidity in air. All signal outputs are available on two 4 to 20 mA analog outputs.

Construction - The EE300Ex transmitter consists of a single compartment electronics housing. The enclosure is of stainless steel and has an integrated or remote humidity and/or temperature sensor.

The EE300Ex transmitter is designed for use with the Product Configuration Adapter (PCA) HA011061 in non-hazardous locations for software configuration.

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Canadian Certificate Of Conformity No: FM17CA0154X

Ratings - The EE300Ex transmitter operates at 6.4-28 Vdc (700mW). The transmitters are rated for use in an ambient temperature range of -40°C to +60°C. The transmitter probe is rated for use in a process temperature range of -70°C to +200°C.

Equipment Group I: EE300Ex without display

EE300EX-HT6SAxxxxbcCAde

- a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- b = Filter; C, D, E, I, J, K, L or M
- c = Sensor Protection; x or 1
- d = Special option; Blank or Gx
- e = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	L _i	C _i
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-HT6SaxbcdefgCAhi

- a = Model; E, M, S or U
- b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- c = Probe – Cable Length; A, B, C, E, F, G or H
- d = Probe Length; C, D, F, G, H, J, K or L
- e = Zone Feedthrough (probe fitting): x, A, B, C, F, H or D
- f = Filter; C, D, E, I, J, K, L or M
- g = Sensor Protection; x or 1
- h = Special option; Blank or Gx
- i = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	L _i	C _i
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-40°C < Ta < 60°C
T5	-40°C < Ta < 75°C
T4	-40°C < Ta < 110°C
T3	-40°C < Ta < 175°C
T2	-40°C < Ta < 180°C
T1	-40°C < Ta < 180°C

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SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0154X

EE300EX-xT6SAxxxxCAb

a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 b = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-xT6SaxbcdeCAf

a = Model; H
 b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 c = Probe – Cable Length; A, B, C, E, F, G or H
 d = Probe length; E
 e = Zone Feedthrough (probe fitting): x, I or J
 f = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-70°C < Ta < 60°C
T5	-70°C < Ta < 75°C
T4	-70°C < Ta < 110°C
T3	-70°C < Ta < 175°C
T2	-70°C < Ta < 200°C
T1	-70°C < Ta < 200°C

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Canadian Certificate Of Conformity No: FM17CA0154X

Equipment Group II: EE300Ex with display

EE300EX-HT6SADaxxbcCAde

- a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- b = Filter; C, D, E, I, J, K, L or M
- c = Sensor Protection; x or 1
- d = Special option; Blank or Gx
- e = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	L _i	C _i
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-HT6SaDbcdefgCAhi

- a = Model; E, M, S or U
- b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
- c = Probe – Cable Length; A, B, C, E, F, G or H
- d = Probe Length; C, D, F, G, H, J, K or L
- e = Zone Feedthrough (probe fitting): x, A, B, C, F, H or D
- f = Filter; C, D, E, I, J, K, L or M
- g = Sensor Protection; x or 1
- h = Special option; Blank or Gx
- i = Software Code: 11 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	P _i	L _i	C _i
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-40°C < Ta < 60°C
T5	-40°C < Ta < 75°C
T4	-40°C < Ta < 110°C
T3	-40°C < Ta < 175°C
T2	-40°C < Ta < 180°C
T1	-40°C < Ta < 180°C

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
 T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0154X

EE300EX-xT6SADaxxxCAb

a = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 b = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

EE300EX-xT6SaDbcdeCAf

a = Model; H
 b = Electrical Connection; B, C, F, G, H, I, V, W, X or Y
 c = Probe – Cable Length; A, B, C, E, F, G or H
 d = Probe length; E
 e = Zone Feedthrough (probe fitting): x, I or J
 f = Software Code: 6 Digits (Not Safety Relevant)

Entity parameters:

Terminals	Vmax or Ui	I _{max} or I _i	Pi	Li	Ci
CH 1: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF
CH 2: + and -	6.4Vdc ≤ Ui ≤ 28Vdc	100mA	0.7W	0mH	2.2nF

Remote probe - Temperature Code:

T-Code	Ambient Temperature
T6	-70°C < Ta < 60°C
T5	-70°C < Ta < 75°C
T4	-70°C < Ta < 110°C
T3	-70°C < Ta < 175°C
T2	-70°C < Ta < 200°C
T1	-70°C < Ta < 200°C

13. Specific Conditions of Use:

Equipment Group I: EE300Ex without display

1. Filter options C, E, J, K and L are not allowed in Groups A or B for Division 1 and EPL Ga IIC for Zone 0.
2. The EE300Ex Remote Probe is approved for in air applications only.
3. The serial software configuration port of the EE300EX may only be used with the Product Configuration Adapter HA011061.

Equipment Group II: EE300Ex with display

1. The EE300Ex Remote Probe is approved for in air applications only.
2. The serial software configuration port of the EE300EX may only be used with the Product Configuration Adapter HA011061.

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SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0154X

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
2 nd October 2017	Original Issue.
30 th November 2017	<u>Supplement 2:</u> Report Reference: – RR211141 dated 30 th November 2017. Description of the Change: Updated standard editions to the latest revisions, added options for electrical connections, added option for probe fitting and converted certificate to new format.

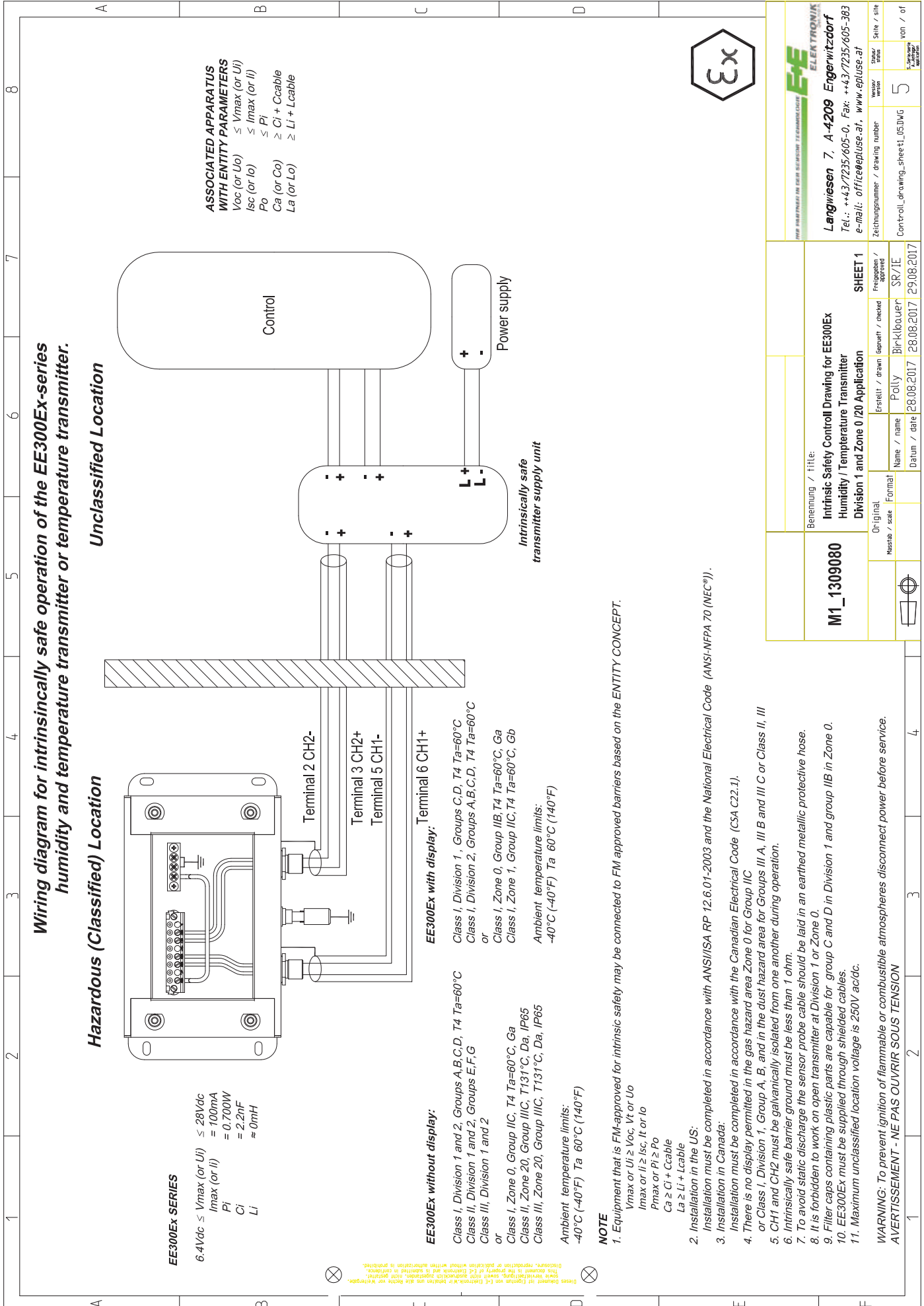
THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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F 348 (Mar 16)

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14. CONTROL DRAWING M1_1309080



Wiring diagram for intrinsically safe operation of the EE300Ex-series humidity and temperature transmitter or temperature transmitter.

Hazardous (Classified) Location

Unclassified Location

ASSOCIATED APPARATUS WITH ENTITY PARAMETERS
 $Voc \text{ (or } Uo) \leq V_{max} \text{ (or } U_i)$
 $Isc \text{ (or } Io) \leq I_{max} \text{ (or } I_i)$
 $Po \leq P_i$
 $Ca \text{ (or } Co) \geq Ci + Ccable$
 $La \text{ (or } Lo) \geq Li + Lcable$

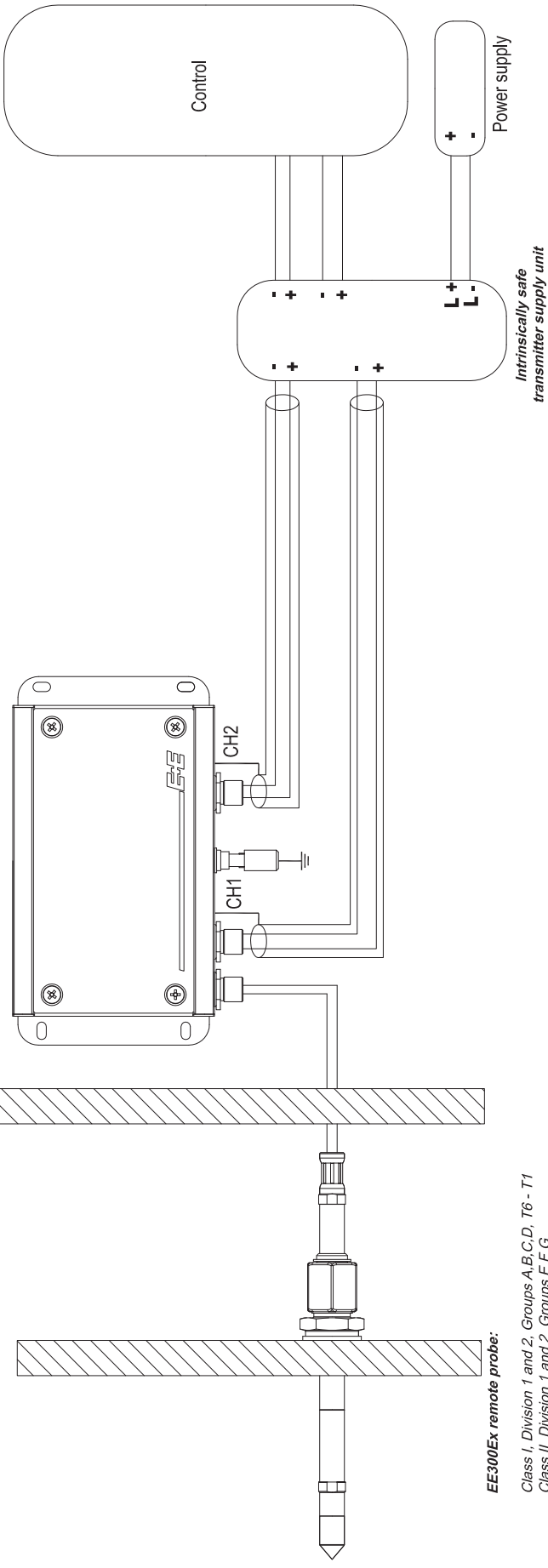


M1_1309080 Original Messstab / scale: 1:1 Erstellt / drawn: Polly Geprüft / checked: Birkelbauer Name / name: Birkelbauer Datum / date: 28.08.2017		Freigegeben / approved: SR/IE Zeichnungsnummer / drawing number: SHEET 1 Control_drawing_sheet1_05.DWG Blatt / sheet: 5 von / of: 5	
Benennung / title: Intrinsic Safety Control Drawing for EE300Ex Humidity / Temperature Transmitter Division 1 and Zone 0/20 Application		SHEET 1 29.08.2017	
EFE ELEKTRONIK Langwiesen 7, A-4209 Engerwitzdorf Tel.: ++43/7235/605-0, Fax: ++43/7235/605-383 e-mail: office@efe.at, www.efe.at			

Wiring diagram for intrinsically safe operation of the EE300Ex-series humidity and temperature transmitter.

Hazardous (Classified) Location

Unclassified Location



EE300Ex remote probe:

- Class I, Division 1 and 2, Groups A,B,C,D, T6 - T1
- Class II, Division 1 and 2, Groups E,F,G
- Class III, Division 1 and 2
- or
- Class I, Zone 0, Group IIC, T6 -T1, Ga
- Class II, Zone 20, Group IIIC, T80°C, Da, IP65
- Class III, Zone 20, Group IIIC, T80°C, Da, IP65

Note:
T6 and T5 only if EE300Ex is in unclassified location

Note for humidity and temperature probe:

- T6 temperature class based on -40°C (-40°F) Ta 60°C (140°F)
- T5 temperature class based on -40°C (-40°F) Ta 75°C (167°F)
- T4 temperature class based on -40°C (-40°F) Ta 110°C (230°F)
- T3 temperature class based on -40°C (-40°F) Ta 175°C (347°F)
- T2 temperature class based on -40°C (-40°F) Ta 180°C (356°F)
- T1 temperature class based on -40°C (-40°F) Ta 180°C (356°F)

Note for temperature probe:

- T6 temperature class based on -70°C (-94°F) Ta 60°C (140°F)
- T5 temperature class based on -70°C (-94°F) Ta 75°C (167°F)
- T4 temperature class based on -70°C (-94°F) Ta 110°C (230°F)
- T3 temperature class based on -70°C (-94°F) Ta 175°C (347°F)
- T2 temperature class based on -70°C (-94°F) Ta 200°C (392°F)
- T1 temperature class based on -70°C (-94°F) Ta 200°C (392°F)

ASSOCIATED APPARATUS WITH ENTITY PARAMETERS
 $V_{oc} \text{ (or } U_o) \leq V_{max} \text{ (or } U_i)$
 $I_{sc} \text{ (or } I_o) \leq I_{max} \text{ (or } I_i)$
 $P_o \leq P_i$
 $C_a \text{ (or } C_o) \geq C_i + C_{cable}$
 $L_a \text{ (or } L_o) \geq L_i + L_{cable}$

Note:
Intrinsic safe supply for EE300Ex is necessary if remote probe is in hazardous location.



M1_1309080

Benennung / title:
Intrinsic Safety Control Drawing for EE300Ex Humidity / Temperature Transmitter Division 1 and Zone 0 / 20 Application

Original	Erstellt / drawn	geprüft / checked	Freigegeben / approved
Maßstab / scale	Name / name	Birklooper	SR/IE
Format	Datum / date	28.08.2017	29.08.2017

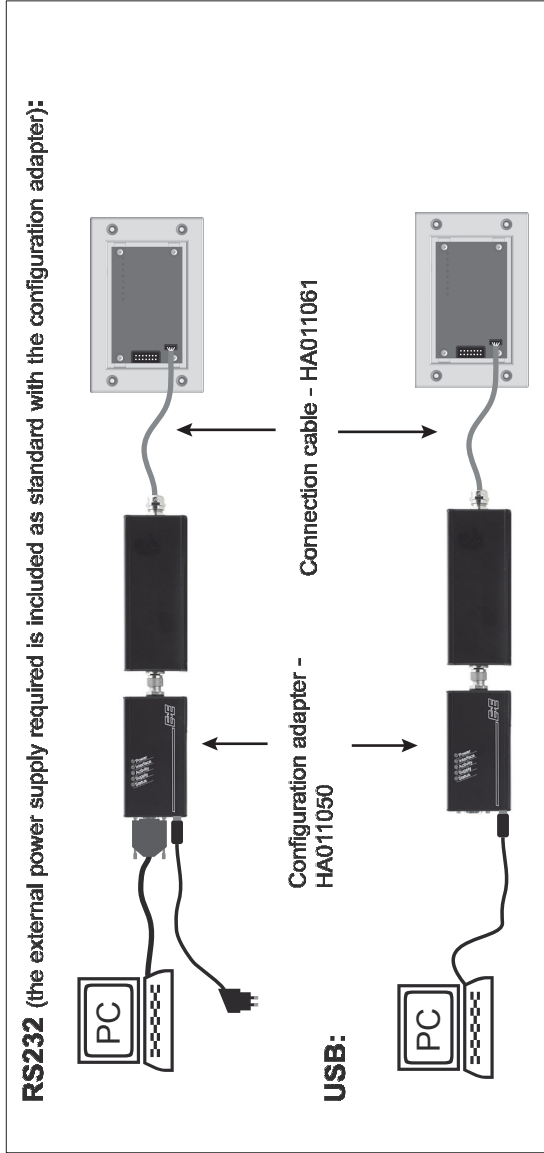
SHEET 2

EE ELEKTRONIK
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 e-mail: office@epluse.at, www.epluse.at
 Zeichnungsnummer / drawing number: Control_drawing_sheet42_05.DWG
 von / of: 5

Wiring diagram for intrinsically safe operation of the EE300Ex-series humidity and temperature transmitter or temperature transmitter.

Product Configuration Adapter (PCA) HA011061:

HA011061 only for Unclassified Location



Ambient temperature limits:
-40°C (-40°F) Ta 40°C (104°F)

Note: Maximum unclassified location voltage is 250V ac/dc



		ELEKTRONIK LANGWIENEN	
M1_1309080		Langwiesen 7, A-4209 Engerwitzdorf Tel.: ++43/7235/605-0, Fax: ++43/7235/605-383 e-mail: office@epluse.at, www.epluse.at	
Benennung / title: Intrinsic Safety Control Drawing for EE300Ex Humidity / Temperature Transmitter Division 1 and Zone 0 / I20 Application		Zeichnungsnummer / drawing number 1	
Original Name / name Polly Birkbauer		Status / status 1	
Erstellt / drawn Name / name Polly Birkbauer		Freigegeben / checked SR/IE	
Datum / date 04.09.2014		Seite / page 1	
Approved / approved SR/IE		von / of 1	

15. CERTIFICATES CHINA, KOREA AND JAPAN

for more information see our website <http://www.epluse.com/ee300ex>

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