

EE30EX 系列

温湿度防爆变送器

本质安全应用

EE30EX 系列变送器是 E+E 公司为了精确测量温度 (-40~+180°C) 湿度 (0~100%RH) 而设计的。这个产品可以压力密封安装耐受 0.01~15 bar 的压力。

EE30EX 满足 **ATEX requirements** 规定，它是完全依照生命和安全标准设计的本质安全型设备。

EN50014: 1997

EN50020: 1994

EN50284: 1998



EC 标准检定执行 Physikalisch technische Bundesanstalt (PTB), 这是德国国家科学技术协会颁布的。

EE30EX 系列变送器是由以下组成

- 供电及变送单元，分类依照 II(1)G [Ex ia] IIC 服从EC标准检定授权PTB 99 ATX 2042.
- 隔离栅及传感探头，分类依照 II1/2G Ex ia IIC T6 服从EC标准检定授权PTB 99 ATX 2043 X

传感探头能使用在0区里，在温度class T6 (apparatus group II, category 1). 为此EE30系列D型和E型的传感探头到隔离栅电缆最长10米。供电及变送单元到隔离栅电缆长度最大到100m.

温湿度模拟信号输出通过电流或电压。

艺术级的微处理器技术使模拟信号的自由选择和对应范围，通过RS232串口进行设置。

此外，在测量温湿度的基础上，EE30EX系列能计算出下列物理量值。

- 露点 T_d
- 霜点 T_f
- 湿球温度 T_w
- 水蒸汽压力 e
- 混合比 r
- 绝对湿度 dv
- 热焓 H

它们可以通RS232串口，模拟输出和LCD液晶显示得到。

通过PC通讯，运行在windows下的友好软件界面，很轻松的就能使用户改变出厂设定。



Model A



Model D



Model E

配置软件

使用配置软件是为了：

- 灵活、方便、快速通过 RS232 串口设置各自的模拟信号。
- 调整温湿度的输出。
- 更换元件。

典型应用

化工处理

制药应用

爆炸危险品贮藏室

特点

EC 标准检定通过 ATEX

可在“0”区使用

高精度达 180°C

露点、绝对湿度，...测量

包括 MS Windows™ 软件

更换湿敏元件

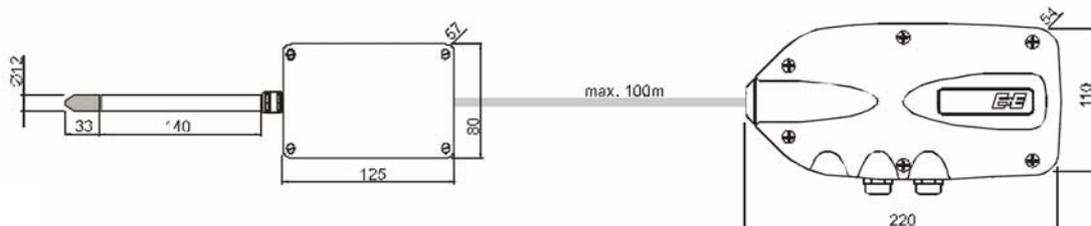
外型尺寸

1 米=3.28 英尺/1 英尺=0.30 米
1 毫米=0.03937 英寸/1 英寸=25.4 毫米

墙面型

EE30EX-A

探头材料：不锈钢

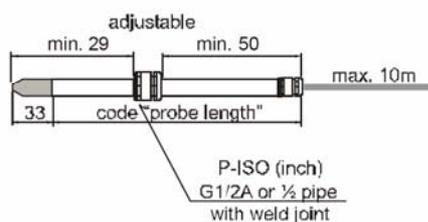
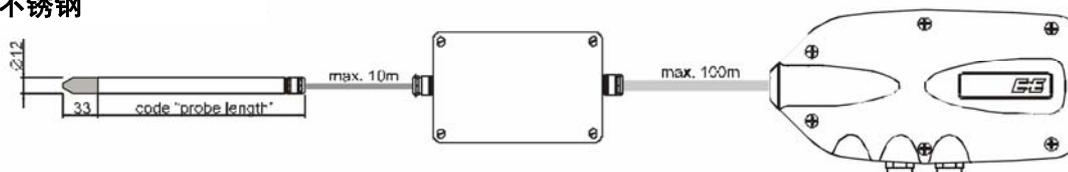


插接式数据电缆

分体探头可达 80°C (256°F)

EE30EX-D

探头材料：不锈钢



压力密封探头可达 15bar (218psi)

EE30EX-E

探头材料：不锈钢

EC 标准检定授权

供电及变送单元

classification: II (1) G [EEx ia] IIC

隔离栅单元及探头

classification: II 1/2 G EEx ia IIC T6

8. ZERTIFIKATE

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)
(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
(3) EC-type-examination Certificate Number:
PTB 99 ATEX 2042



- (4) Equipment: Measuring instrument for temperature and humidity type EEX3EX, supply and evaluation unit
(5) Manufacturer: E+E Elektronik Gesellschaft mbH
(6) Address: Langwiesen 7, A-4210 Engelstorf
(7) The equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that the 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 to the Directive.
The examination and test results are recorded in the confidential report PTB Ex 99-27305
(9) Compliance with the Essential Health and Safety Requirements has been assessed by compliance with:
EN 50041-1997 EN 50020-1994 EN 50284-1999
(10) If the sign "CE" 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) The EC-type-examination Certificate relates only to the design and 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:

Zertifizierungsstelle Explosionschutz
By order:
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

II (1) G [EEx ia] IC
Braunschweig, May 17, 1999

Sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificate may be included only without alteration. Details of a certificate are subject to approval by the Physikalisch-Technische Bundesanstalt in case of dispute. The user shall bear the price.
Physikalisch-Technische Bundesanstalt - Bundesallee 100 - D-31110 Braunschweig

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(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2042**

(15) **Description of equipment**
The measuring instrument for temperature and humidity type EEX3EX, supply and evaluation unit is a microprocessor controlled measuring instrument for the measure of temperature and humidity and calculation of thermodynamic values.
The maximum permissible ambient temperature is: +60 °C

Electrical data

Supply (Terminal X1.1 and 2) SELV 24 V (AC/DC) ±15%, 150 mA
U_i = 250 V
Analog output (Terminal X2.1 to 3) 4-20 mA current loop
U_i = 250 V
or
0-10 V
U_i = 250 V

Interface circuit

(Terminal X3.1 to 3) RS422 C
U_i = 250 V
Supply circuit (Terminal X4.1 and 2) type of protection intrinsic Safety EEx ia IC, maximum values:
U_i = 12,6 V
I_a = 77 mA
P_a = 243 mW
Linear output characteristic:
C₁ = 52 mV
L: negligibly small
C₂ = 1,1 µF
L₂ = 5,6 mH

Interface circuit (RS422) (Terminal X4.3 to 5) type of protection intrinsic Safety EEx ia IC, for connection to a certified intrinsically safe circuit only, maximum values:
U_i = 12,6 V
C: negligibly small
L: negligibly small

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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificate may be included only without alteration. Details of a certificate are subject to approval by the Physikalisch-Technische Bundesanstalt in case of dispute. The user shall bear the price.
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SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2042

The intrinsically safe circuits are safety electrically isolated from all other circuits up to a peak value of the nominal voltage of 250 V.

(16) Report PTB Ex 99-27305

(17) Special conditions for safe use: not applicable

(18) Essential health and safety requirements: Met by the standards mentioned above

Zertifizierungsstelle Explosionschutz
By order:
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, May 17, 1999



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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)
(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
(3) EC-type-examination Certificate Number:
PTB 99 ATEX 2043 X



- (4) Equipment: Measuring instrument for temperature and humidity type EEX3EX, sensor driver unit
(5) Manufacturer: E+E Elektronik Gesellschaft mbH
(6) Address: Langwiesen 7, A-4210 Engelstorf
(7) The equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that the 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 to the Directive.
The examination and test results are recorded in the confidential report PTB Ex 99-27467
(9) Compliance with the Essential Health and Safety Requirements has been assessed by compliance with:
EN 50041-1997 EN 50020-1994 EN 50284-1999
(10) If the sign "CE" 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) The EC-type-examination Certificate relates only to the design and 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:

Zertifizierungsstelle Explosionschutz
By order:
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

II 1/2 G EEx ia IIC T6
Braunschweig, May 17, 1999

Sheet 1/3

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(15) **Description of equipment**

The measuring instrument for temperature and humidity type EEX3EX sensor driver unit is a part of the microprocessor controlled measuring instrument series EEX3EX for the measure of temperature and humidity and calculation of thermodynamic values. The measuring instrument for temperature and humidity type EEX3EX sensor driver unit consists of the parts sensor driver electronics and the sensor. The relation between the part of device and the category are shown in the following table:

Part of device	User area
Sensor driver electronics	Category 2
Sensor driver electronics with cable tail	Category 2
Sensor with cable tail	Category 1

The maximum permissible ambient temperature is: +60 °C

Electrical data

Supply circuit (Terminal X1.1 and 2) type of protection intrinsic Safety EEx ia IC, for connection to a certified intrinsically safe circuit only, maximum values:
U_i = 12,6 V
I_a = 77 mA
P_a = 243 mW
C: = 820 nF
L: negligibly small

Sensor output

(Terminal X2.1 to 5) type of protection intrinsic Safety EEx ia IC, for connection to the related sensor only.

(16) Report PTB Ex 99-27467

(17) Special conditions for safe use

The measuring instrument for temperature and humidity type EEX3EX sensor driver unit consists of the sensor driver electronics and the sensor.

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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificate may be included only without alteration. Details of a certificate are subject to approval by the Physikalisch-Technische Bundesanstalt in case of dispute. The user shall bear the price.
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SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2043 X

The sensor driver electronics may only be used in hazardous areas for which, according to the requirements for equipment-group II, equipment of category 2 is necessary.

The sensor in the version separated from the sensor driver electronics, with cable tail, may be installed in the portion of the area for which, according to the requirements for equipment-group II, equipment of category 2 is necessary. The ambient conditions must be in compliance with the atmospheric conditions according to EN 50284 (temperature range: -20 °C to +60 °C, absolute pressure range: 0,8 bar to 1,1 bar).

The sensor in the version separated from the sensor driver electronics, with cable tail, may be used in the area for which, according to the requirements for equipment-group II, equipment of category 1 is necessary, even with a maximum cable length of 10 m. The ambient conditions must be in compliance with the atmospheric conditions according to EN 50284 (temperature range: -20 °C to +60 °C, absolute pressure range: 0,8 bar to 1,1 bar).

When the sensor is installed inside the category 1 area, the sensor is to be installed such that impact sparks and friction sparks must not be taken into consideration even in the case of fault occurring nearby. The cable pertaining to the sensor is to be run inside the category 1 area so that it is protected from electrostatic discharges related to explosion group IC. The cable provides sufficient protection from electrostatic discharges related to explosion group IB.

(18) Essential health and safety requirements

Met by the standards mentioned above.

Zertifizierungsstelle Explosionschutz
By order:
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

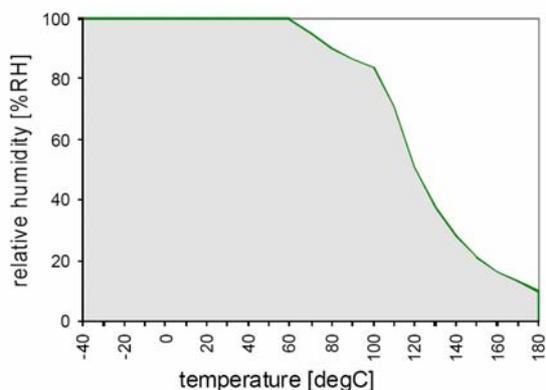
Braunschweig, May 17, 1999



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湿度传感工作范围



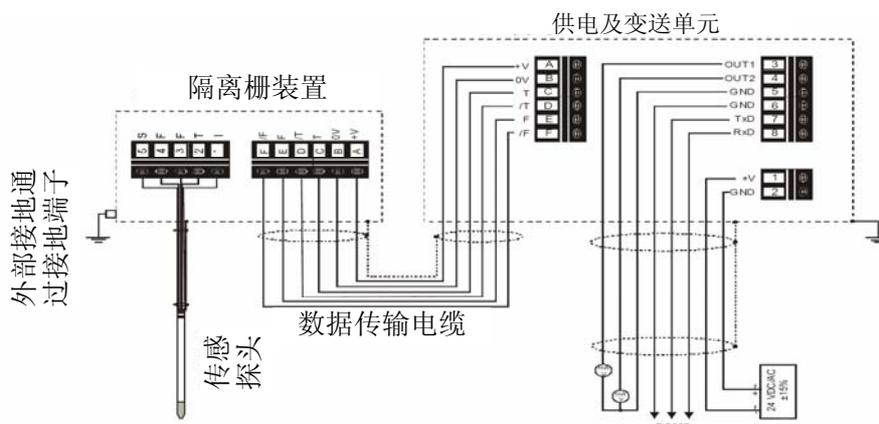
这个指定的湿度传感元件工作范围展示了温湿度的限制条件。

尽管传感器不会因超过限制而损坏，但它的性能仅在指定的工作范围限制内表现最佳。

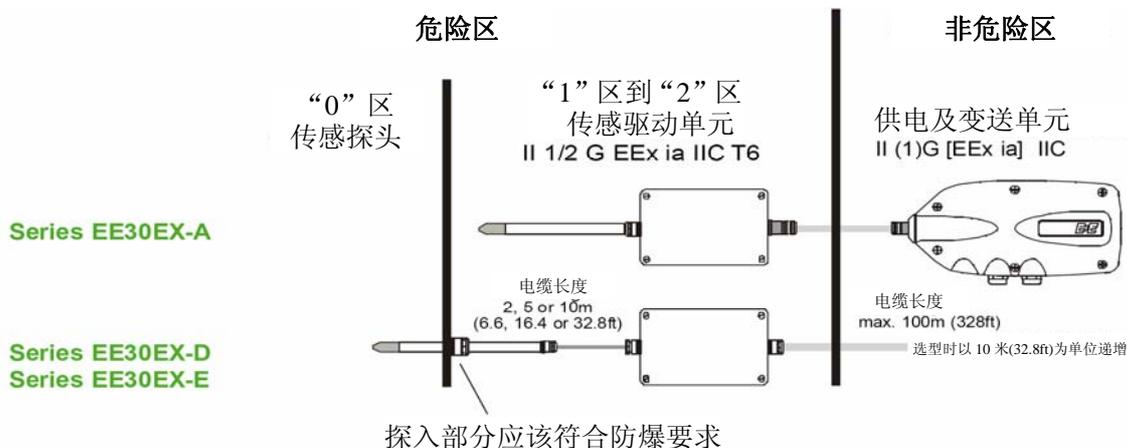
传感探头的保护外衣

为了应付大量的污染或蔓延的环境 E+E 发展一种特殊的保护外衣进行防护(选型: HC 01)。在温湿度传感元件上覆盖一层聚合体的薄膜。经过广泛的测试表明在抵抗化学污染有一个惊奇的进步。在长期稳定性方面领先于其它变送器。

接线图



接线图



EE30EX 选型表

		EE30EX-A	EE30EX-D	EE30EX-E
1 – 变送器				
硬件配置				
过滤器	不锈钢过滤器 (3)	3	3	3
	PTFE 过滤器 (5)	5	5	5
	金属格栅过滤器 (到 120°C/248°F) (6)	6	6	6
电缆长度	2 米 (02)		02	02
	5 米 (05)		05	05
	10 米 (10)		10	10
探头长度	200 毫米 (2)		5	5
	400 毫米 (5)		6	6
探入的压力	1/2" male thread (HA03)		HA03	HA03
密封	1/2" Pipe weld joint (HA05)		HA05	HA05
	1/2" NPT thread (HA07)		HA07	HA07
数据电缆	无插接式电缆 (无代码)			
	有插接式电缆 (P02)	P02	P02	P02
显示器	无显示器 (无代码)			
	有显示器 (D01)	D01	D01	D01
元件外衣	无 (无代码)			
	有 (HC01)	HC01	HC01	HC01
校准	标准 (无代码)			
	高湿校准 (CA01)	CA01	CA01	CA01
软件配置				
输出参数	相对湿度 RH [%] (A)	通道 1	从 (A-H, J) 中选择	
	温度 T [°C] (B)	通道 2	从 (A-H, J) 中选择	
	露点温度 Td [°C] (C)			
	霜点温度 Tf [°C] (D)			
	湿球温度 Tw [°C] (E)			
	水气分压 e [mbar] (F)			
	混合比 r [g/㎏] (G)			
	绝对湿度 dv [g/m³] (H)			
	热焓 H [kJ/kg] (J)			
输出信号	0-5V (2)	从 (2, 3, 6) 中选择		
	0-10V (3)			
	4-20mA (6)			
测量单位	公制 (无代码)		E01	E01
	非公制 (E01)		E01	E01
T/Td 温度范围	-40~60°C (-40~140°F) (T02)	-20~100°C (-4~212°F) (T14)	温度 T	从 (T02 - T52) 中选择
	-10~50°C (14~122°F) (T03)	+20~100°C (68~212°F) (T15)	露点 Td	从 (Td02 - Td52) 中选择
	0~50°C (32~122°F) (T04)	0~120°C (32~248°F) (T16)		
	0~100°C (32~212°F) (T05)	0~80°C (32~176°F) (T21)		
	0~60°C (32~140°F) (T07)	-40~80°C (-40~176°F) (T22)		
	-30~70°C (-22~158°F) (T08)	-20~80°C (-4~176°F) (T24)		
	-30~120°C (-22~248°F) (T09)	-20~80°C (-4~176°F) (T25)		
	-20~120°C (-4~248°F) (T10)	-40~160°C (-40~320°F) (T33)		
	-40~120°C (-40~248°F) (T12)	+20~140°C (68~284°F) (T40)		
		-40~180°C (-40~356°F) (T52)		
2 – 数据电缆				
数据电缆 最大 100m(328ft)/变送器		数据电缆	xxxm	xxxm
			xxxm	xxxm

定货范例

EE30EX-E3056HA03P02/BC3-T05-Td14 温湿度变送器EE30EX

1) 变送器

型号: 压力密封安装型 探头长度: 400m(15.8 英寸) 输出 1: 温度 温度输出范围: 0-100°C
 过滤器: 不锈钢过滤器 密封: 1/2" male thread 输出 2: 露点 露点输出范围: -20-100°C
 电缆: 5m(16.4ft) 数据电缆: 有 输出信号: 0-10V

2) 数据电缆: 数据电缆长度 60m(196.8ft)

(如有翻译不周之处, 请以英文资料为准; 技术参数如有改动, 恕不另行通知。V2.1)