# HUMIDITY/TEMPERATURE TRANSMITTER FOR INTRINSICALLY SAFE APPLICATIONS

Series EE30EX Transmitters from E + E Elektronik are designed for the accurate measurement of humidity and temperature in the range between 0..100 %rH and -40 ..+180 degC in possibly explosive atmospheres.

The main features of this transmitter series are humidity and temperature measurement of the highest accuracy, based on the E + E high quality capacitive humidity sensor with excellent long term stability and the manufacturers many years of experience in humidity measurement. The transmitter has an EU approved ATEX 100a registration.

The transmitters conform to the basic health and safety standards of intrinsically safe machinery according to the indicator "EEx ia" subject to EN50014:1997, EN50020:1994 and EN50284:1998.

The development of the transmitter was based on the harmonised ATEX instructions, the EC type examinations were carried out by the national institute for science and technology the German Physikalisch-Technische Bundesanstalt (PTB) .

In compliance with ATEX instructions a named authority was involved in production control.

Series EE30EX transmitters consist of the

EE30EX supply and evaluation unit classified according to [EEx ia] IIC subject to EC-type examination protocol PTB 99 ATX 2042.

And the

Sensor unit comprises the EE30EX sensor driver device and the H/T sensor probe, classified according EEx ia IIC T6 subject to EC-type examination protocol PTB 99 ATX 2043 X

Series EE30EX transmitters are for applications deep in Zone 0 and for temperature class T6. For example, Version C of the sensor probe can be separated with a maximum cable length of 10m to be mounted inside Zone 0 (acc. apparatus group II, category 1). The supply and evaluation device can be separated from the sensor driver device through a cable up to a max. length of 100 m .

There are three housing versions available

**housing A wall mounting** in explosive Zone 1 or 2

**housing B separated sensor head** (up to 10 m) for installation directly in the zone wall

**housing C with separated sensor head** (up to 10 m) for installation deep in zone 0

08/1999 Technical data are subject to change

## MAIN FEATURES

- EC-Type Examination acc. ATEX
- approved for ZONE 0
- highest accuracy up to 180 degC
- dew point, absolute humidity,... measurement
- incl. MS Windows™ Software
- Humidity sensor interchangeable

A modern microprocessor based transmitter device enables highest installation flexibility for daily use and periodical monitoring.

Functions, calculated out of relative humidity and temperature like dew point, absolute humidity, enthalpy,....as well as 2 free selectable and free scale analogue outputs with an additional RS232 interface (already realised and appreciated for the series SERIE E28/30), are main features of EE30EX series.

Additionally the transmitters can be supplied with a local LC-display on the housing cover. Thus the measurement readings are equivalent with the actual selected analogue values.

# SOFTWARE DESCRIPTION

All EE30EX transmitters are equipped with user friendly software, running under MS WINDOWS ™. Through clear and menu controlled graphics, users have the possibility of individual transmitter configuration, of monitoring and recording measurment data, and of easy service functions.

It is also possible to communicate directly with the transmitter via standard terminal software to integrate the EE30EX into free memory programmed controls. All digital data to and from the transmitter is transferred via an RS232 C serial interface.
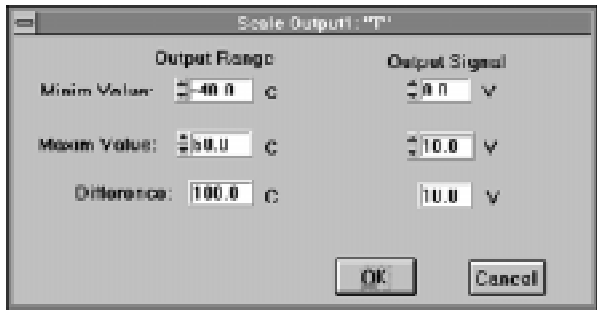
## *Freely selectable and scalable outputs*

The User has a free choice of allocating the measuring value on the two analogue outputs. Output range and output signal are freely scalable and selectable. The measuring interval is individually adjustable.

## *Sensor exchange*

Humidity sensors as well as temperature sensors are simply interchangeable. If a sensor element is damaged it is possible to order replacement sensors from the manufacturer. The electronic device is easily adjusted via software, through direct input of the delivered sensor data.

Expensive and time consuming transmitter returns are therefore unnecessary.
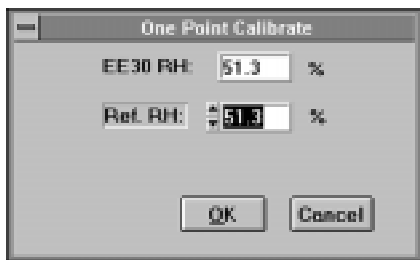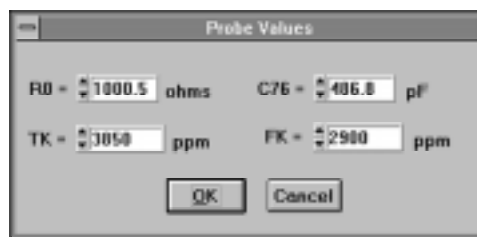
## *Calibration*

The EE30EX software provides an one-point calibration procedure for relative humidity and temperature. On request the transmitters can be easily adjusted through a simple program step. For humidity calibration we offer a reliable reference calibration set. (see accessories)

## *Calculated variables*

Using the two measured values of relative humidity and temperature, the EE30EX is able to calculate the following additional variables.

dew point temperature       Td
frost point temperature      Tf
wet bulb temperature         Tw
water vapour pressure        e
mixing ratio                 r
absolute humidity            dv
specific enthalpy            H

The calculation functions are displayd on the analogue outputs as well as on the RS 232C serial output.
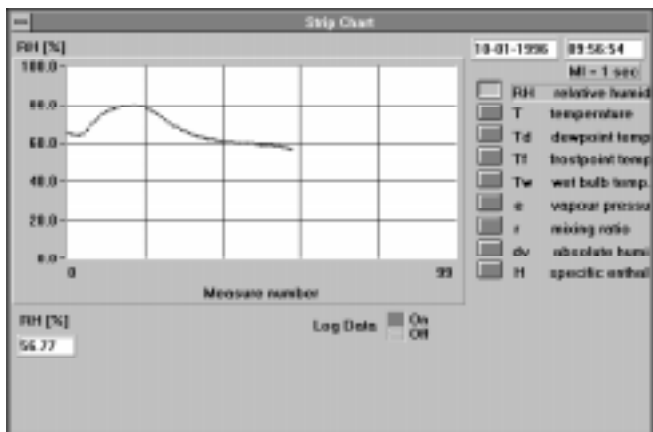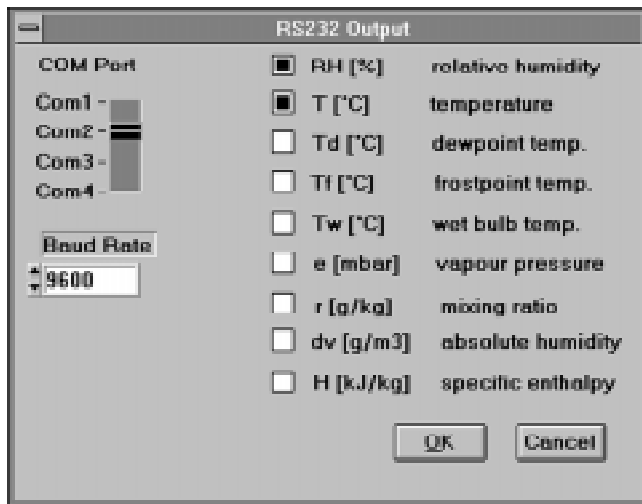
## *Display functions for measuring value*

Actual measuring values can be displayed on-line on the computer screen. The values can be described in a strip chart or in the form of a continuous output list.

Via Data-logging function measuring values can be stored in an ASCII code format on diskette of hard disk. They can be read and processed by almost all standard software programmes. (e.g. Excel, Lotus 123, Quattro Pro, etc.)

# HOUSING

## MODEL A
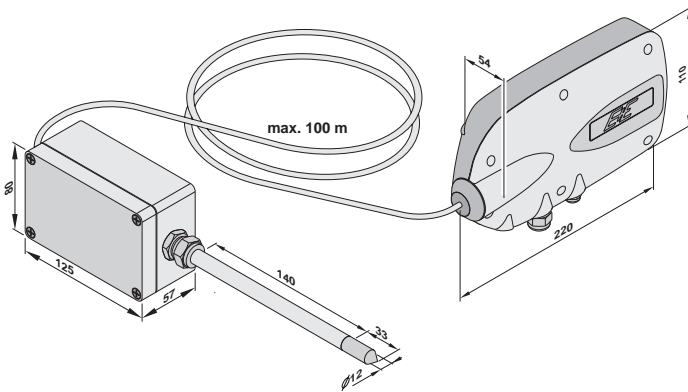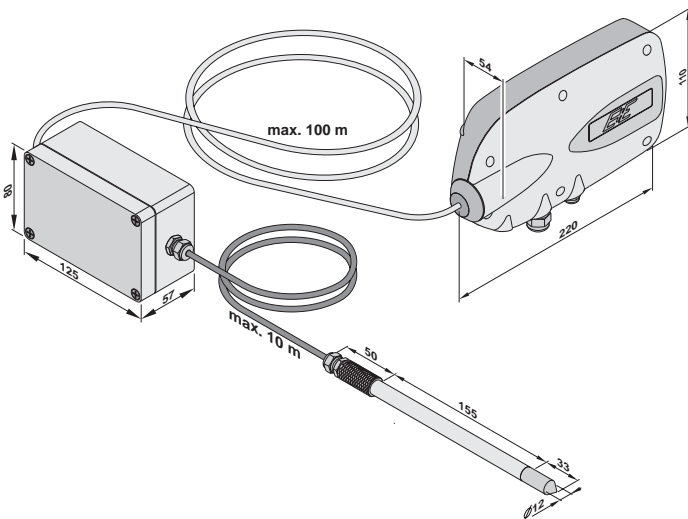
Model for wall mounting.

The sensor head is fixed mounted on the sensor driver unit.

The sensor driver unit can be installed in ZONE 1 or ZONE 2.

Working range sensor head: -20...60 degC

Working range electronic: -40...60 degC

## MODEL B

Model with separated sensor head for mounting direct in the bulkhead.

The sensor driver unit can be installed in ZONE 1 or ZONE 2.

The up to 10m separated sensor head is mounted directly in the bulkhead to the next higher EX-Zone.

The mounting is done with a feedthrough which corresponds to the Ex-requirements. The feedthrough is included in the delivery.

Working range sensor head: -40...180 degC

Working range electronic: -40...60 degC

## MODEL C

Model with separatet sensor head for mounting deep in ZONE 0.

The sensor driver unit can be installed in ZONE 1 or ZONE 2.

The up to 10m separated sensor head is mounted direct in ZONE 0. For the feedthrough in the bulkhead, a stainless steel tube is fixed mounted on the measuring lead.

The mounting is done with a feedthrough which corresponds to the Ex-requirements. The feedthrough is included in the delivery.

Working range sensor head: -40...180 degC

Working range electronic: -40...60 degC

# TECHNICAL DATA

## Measurands

### Relative humidity

| | |
|---|---|
| Humidity sensor [1] | Series HC |
| Working range humidity [1] | 0...100 %RH |
| Accuracy humidity incl. hysteresis and nonlinearity with calibration against certificated standards standard calibration | ± 1% RH (0....90% RH)  ± 2% RH (90....100% RH)<br>± 2% RH (0....90% RH)  ± 3% RH (90....100% RH) |
| Temperature dependance electronic | typical 0,06 %RH/degC |
| Temperature dependance sensor head | < 0,03 %RH/degC |
| Response time with filter at 20 degC / $t_{90}$ | < 30 sec. |

### Temperature

| | | |
|---|---|---|
| Temperature sensor | Pt 1000 (DIN EN 60751, class A) | |
| Working range sensor head | EE30Ex-A  -20...60 degC | -4...140 °F |
| | EE30Ex-B  -40...180 degC | -40...356 °F |
| | EE30Ex-C  -40...180 degC | -40...356 °F |
| Accuracy at 20 degC | ± 0,1 degC | |
| Temperature dependence | typical 0,005 degC/degC | |

### Calculation functions

| | | | | | | |
|---|---|---|---|---|---|---|
| dew point temperature | Td | -80...100 degC (-112...212 °F) | mixing ratio | r | 0...999 g/kg (0...9999 gr/lb) | |
| frost point temperature | Tf | -80...0 degC (-112...32 °F) | absolute humidity | dv | 0...700 g/m³ (0...300 gr/ft³) | |
| wet bulb temperature | Tw | 0...100 degC (32...212 °F) | spezific enthalpy | H | -50...2800 kJ/kg (-15000...999999 lbf/lb) | |
| water vapour pressure | e | 0...1100 mbar (0...15 psi) | | | | |
| Accuracy | ref. to data sheet series EE28/30 | | | | | |

## Outputs

| | | |
|---|---|---|
| Two freely selectable and scalable outputs<br>0...100 %r.F. / -20 (-40) ... 60 (180)degC analogue | 0 - 5 V | < 1.0 mA |
| | 0 - 10 V | < 1.0 mA |
| | 4 - 20 mA | $R_L$ < 400 Ohm |
| Serial output | RS 232C | |

## General

| | | |
|---|---|---|
| Supply voltage | SELV 24 VDC/VAC ±15% | |
| Current consumption | ≤ 150mA (24 VDC); ≤ 280mA (24 VAC) | |
| System requirements for communication-software | IBM compatible AT, 386/33 MHz or higher (with Coprocessor), appr. 5 MB free hard disk memory, 4 MB RAM, 3.5 "" disk drive, serial interface, mouse (recommended), MS WINDOWS 3.1 or higher | |
| Serial bus type for PC communications | RS 232 C | |
| Housings | supply- and evaluation unit | ABS-plastic/ IP65 |
| | sensor driver unit | AlSi12 (DIN 1725) |
| Cable socket | PG 7 and PG 9; for cable diameter 5 - 9 mm | |
| Connection | screw terminals max. 1.5 mm² | |
| Sensor protection | sintered stainless steel filter | |
| Working temperature range | sensor probe: | see measuring range |
| | elektronic sensor driver device: | -20...60 degC (-4...140 °F) |
| | elektronic supply- and evaluation device: | -20...60 degC (-4...140 °F) |
| | elektronic with display: | 0...40 degC (32...104 °F) |
| Storage temperature range | electronics and sensor head | -30...60 degC (-22...140 °F) |
| Elektromagnetic compatibility according | EN50081-2    EN50081-1<br>EN50082-2    EN50082-1 | C E |

[1] Pay attention to the working range of the humidity sensor! (ref. to data sheet EE28/30)

# EC-TYPE EXAMINATION CERTIFICATE

## SUPPLY- AND EVALUATION UNIT
classification: [EEx ia] IIC

## SENSOR DRIVER UNIT AND SENSOR PROBE
classification: EEx ia IIC 1G T6

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### Certificate 1 (left stack) — Sheet 1/3

**Physikalisch-Technische Bundesanstalt** PTB
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 EE30EX supply and evaluation unit

(5) Manufacturer: E+E Elektronik Gesellschaft mbH

(6) Address: Langwiesen 7, A-4210 Engerwitzdorf

(7) This 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 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 to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 99-27385.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997    EN 50020:1994

(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 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:

⟨Ex⟩ II (1) G  [EEx ia] IIC

Zertifizierungsstelle Explosionsschutz     Braunschweig, May 17, 1999
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Sheet 1/3

EC-type-examination Certificates 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 the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.
Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

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### Certificate 1 — Sheet 2/3 (PTB 99 ATEX 2042)

(15) **Description of equipment**

The measuring instrument for temperature and humidity type EE30EX supply and evaluation unit is a microprocessor controlled measuring instrument for the measure of temperature and humidity and calculation of thermodynamics values.

The maximum permissible ambient temperature is: +60 °C

**Electrical data**

Supply                         SELV 24 V (AC/DC) ±15%, 150 mA
(Terminal X1:1 and 2)          $U_m$ = 250 V

Analog output                  4-20 mA current loop
(Terminal X2:1 to 3)           $U_m$ = 250 V
                               or
                               0-10 V
                               $U_m$ = 250 V

Interface circuit              RS232 C
(Terminal X3:1 to 3)           $U_m$ = 250 V

Supply circuit                 type of protection Intrinsic Safety EEx ia IIC,
(Terminal X4:1 and 2)          maximum values:
                               $U_o$ = 12,6 V
                               $I_o$ = 77 mA
                               $P_o$ = 243 mW
                               Linear output characteristic
                               $C_i$ = 62 nF
                               $L_i$ negligibly small
                               $C_o$ = 1,1 µF
                               $L_o$ = 5,5 mH

Interface circuit (RS422)      type of protection Intrinsic Safety EEx ia IIC,
(Terminal X4:3 to 6)           for connection to a certified intrinsically safe circuit
                               only; maximum values:
                               $U_o$ = 12,6 V
                               $C_i$ negligibly small
                               $L_i$ negligibly small

Sheet 2/3

EC-type-examination Certificates 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 the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.
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### Certificate 1 — Sheet 3/3

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2042

The intrinsically safe circuits are safely electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V.

(16) Report PTB Ex 99-27385

(17) Special conditions for safe use
Not applicable

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

Zertifizierungsstelle Explosionsschutz     Braunschweig, May 17, 1999
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Sheet 3/3

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Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

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### Certificate 2 (right stack) — Sheet 1/3

**Physikalisch-Technische Bundesanstalt** PTB
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 EE30EX sensor driver unit

(5) Manufacturer: E+E Elektronik Gesellschaft mbH

(6) Address: Langwiesen 7, A-4210 Engerwitzdorf

(7) This 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 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 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 assured by compliance with:
EN 50014:1997    EN 50020:1994    EN 50284:1998

(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 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:

⟨Ex⟩ II 1/2 G  EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz     Braunschweig, May 17, 1999
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Sheet 1/3

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### Certificate 2 — Sheet 2/3 (PTB 99 ATEX 2043 X)

(15) **Description of equipment**

The measuring instrument for temperature and humidity type EE30EX sensor driver unit is a part of the microprocessor controlled measuring instrument series EE30EX for the measure of temperature and humidity and calculation of thermodynamics values. The measuring instrument for temperature and humidity type EE30EX sensor driver unit consists of the parts, sensor driver electronic 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 electronic | Category 2 |
| Sensor driver electronic with sensor | Category 2 |
| Sensor with cable tail | Category 1 |

The maximum permissible ambient temperature is: +60 °C

**Electrical data**

Supply circuit                 type of protection Intrinsic Safety EEx ia IIC,
(Terminal X1:1 and 2)          for connection to a certified intrinsically safe circuit
                               only; maximum values:
                               $U_i$ = 12,6 V
                               $I_i$ = 77 mA
                               $P_i$ = 243 mW
                               $C_i$ = 820 nF
                               $L_i$ negligibly small

Sensor output                  type of protection Intrinsic Safety EEx ia IIC,
(Terminal X2:1 bis 6)          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 EE30EX sensor driver unit consists of the sensor driver electronics and the sensor.

Sheet 2/3

EC-type-examination Certificates 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 the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.
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### Certificate 2 — Sheet 3/3

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 partition 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 faults occurring rarely. The cable pertaining to the sensor is to be run inside the category 1 area so that it is protected from electrostatic charging related to explosion group IIC. The cable provides sufficient protection from electrostatic discharges related to explosion group IIB.

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

Zertifizierungsstelle Explosionsschutz     Braunschweig, May 17, 1999
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

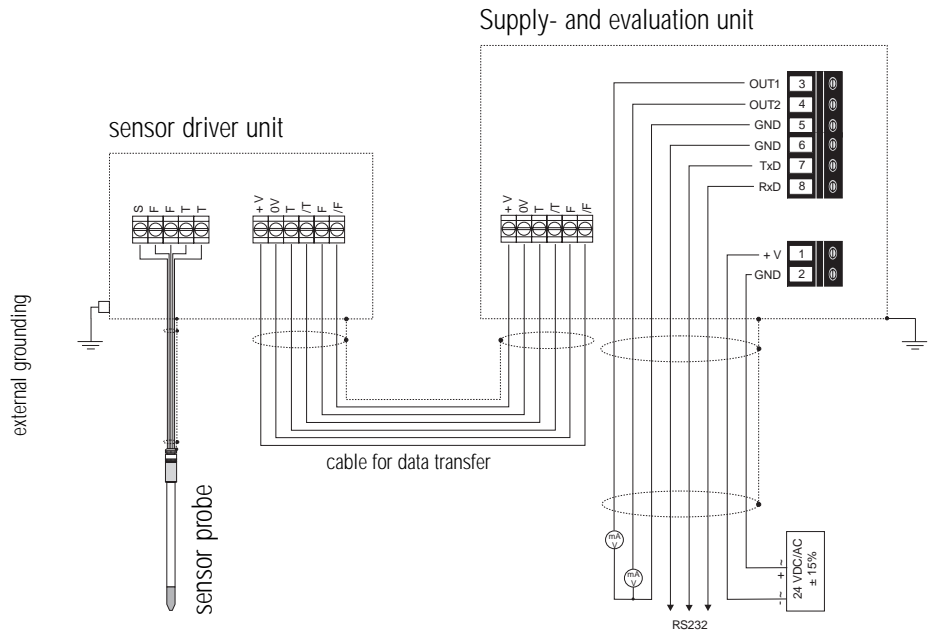Sheet 3/3

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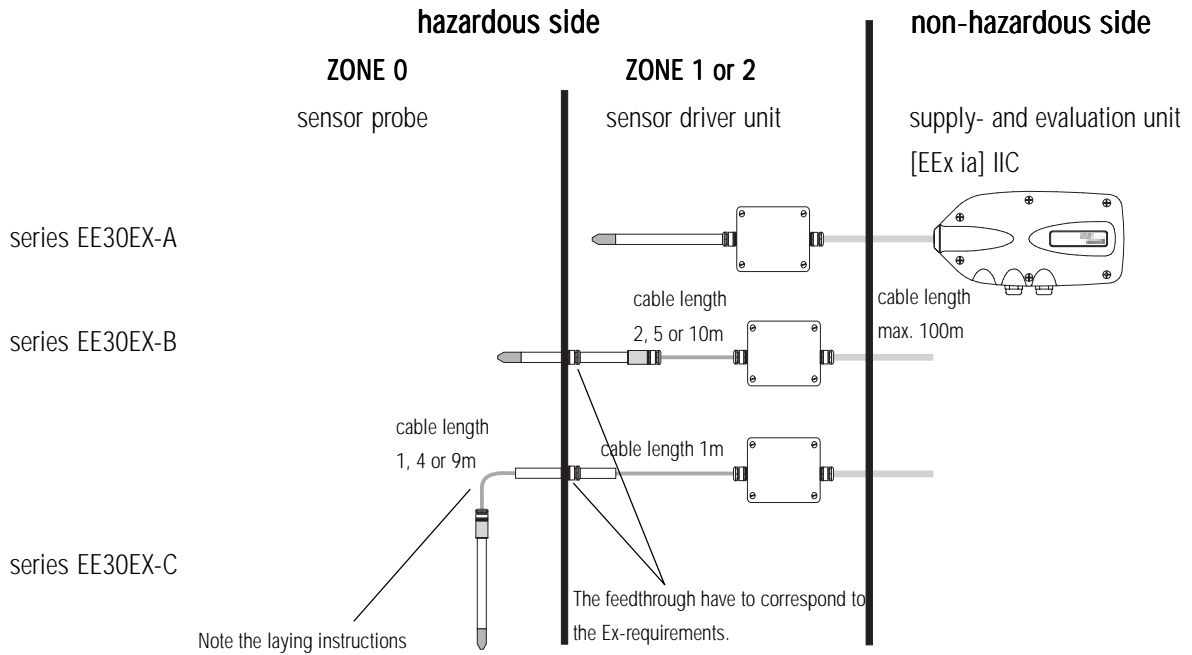Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig
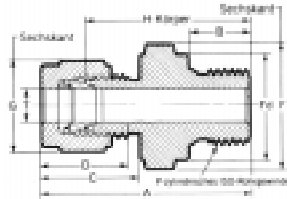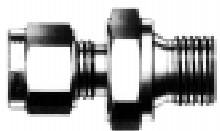
# CONNECTION DIAGRAM

Supply- and evaluation unit

sensor driver unit

| OUT1 | 3 |
| OUT2 | 4 |
| GND | 5 |
| GND | 6 |
| TxD | 7 |
| RxD | 8 |

| + V | 1 |
| GND | 2 |

external grounding

sensor probe

cable for data transfer

24 VDC/AC ± 15%

RS232

# MOUNTING EXAMPLES

hazardous side                non-hazardous side

ZONE 0          ZONE 1 or 2

sensor probe          sensor driver unit          supply- and evaluation unit [EEx ia] IIC

series EE30EX-A

series EE30EX-B

cable length 2, 5 or 10m          cable length max. 100m

cable length 1, 4 or 9m          cable length 1m

series EE30EX-C

Note the laying instructions

The feedthrough have to correspond to the Ex-requirements.

# FEEDTHROUGH

**HA 01 02 03**          **HA 01 02 05**
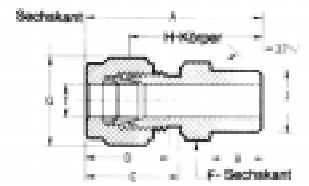
| | P-ISO male thread (inch) | weld joint (inch) | A (mm) | B (mm) | C (mm) | D (mm) | F (mm) | Fd (mm) | T (mm) | G (mm) | H (mm) | J (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HA 01 02 03 | G1/2A | - | 49,0 | 14,2 | 22,0 | 22,8 | 27 | 26,0 | 12,0 | 22 | 38,9 | - |
| HA 01 02 05 | - | 1/2-pipe | 49,0 | 19,0 | 22,0 | 22,8 | 22 | - | 12,0 | 22 | 38,9 | 21,3 |

# ACCESSORIES

## DIGITAL DISPLAY

The EE30EX transmitters are available with a local display on the housing cover. With this interesting feature you have the possibility to display on-line the current measured values.



## CALIBRATION CERTIFICATE



Based on the high measuring accuracy the EE30EX series is suitable as reference device.

To meet the high demands regarding monitored measuring instruments, it is possible to order our series EE30EX either with specific test report according DIN EN 10204 - 2.3 as well as with an official PTB calibration certificate.

## CALIBRATION SET

To check and possibly adjust the transmitter series EE30EX, we offer user friendly calibration equipment.

The calibration devices are carefully designed for specific use with the EE30EX probe, to allow accurate and reliable calibration without influence from the surrounding air.

Non saturated liquid lithium-chloride solutions serve as the standards. These are available in sets of five ampoules, which may be stored for an indefinite length of time. Humidity standards for 10/35/50/80 and 95 %rH are available.

# ORDER INFORMATION
## CODE FOR HARDWARE

| EE30EX | CODE 1 | MODEL | | | | | |
|--------|--------|-------|--|--|--|--|--|
| | A | wall mounting | | | | | |
| | B | separated sensor probe for installation in Zone-pulkhead | | | | | |
| | C | separated sensor probe for installation deep in Zone 0 | | | | | |

| | CODE 2 | CABLE LENGTH SENSOR PROBE (only for model B and C) |
|--|--------|---------------------------------------------------|
| | 02 | 2m |
| | 05 | 5m |
| | 10 | 10m |

| | CODE 3 | CABLE LENGTH DATA CABLE (light blue) |
|--|--------|--------------------------------------|
| | K02 | 2m |
| | K05 | 5m |
| | K10 | 10m |
| | K20 | 20m |
| | Kxx | in steps of 10m up to max. 100m |

| | CODE 5 | FEEDTHROUGH (only for model B and C) |
|--|--------|--------------------------------------|
| | HA03 | with male thread (HA 01 02 03) |
| | HA05 | with weld joint (HA 01 02 05) |

## CODE FOR SOFTWARE SETTING

| CODE 1 | SETTING FOR OUTPUT 1 | | | | | | | | |
|--------|----------------------|----|-------|-------|---|----------------------|----|--------|--------|
| A | relative humidity | RH | [%] | [%] | F | water vapour pressure | e | [mbar] | [psi] |
| B | temperature | T | [degC] | [°F] | G | mixing ratio | r | [g/kg] | [gr/lb] |
| C | dew point temperature | Td | [degC] | [°F] | H | absolute humidity | dv | [g/m³] | [gr/ft³] |
| D | frost point temperature | Tf | [degC] | [°F] | J | specific enthalpy | H | [kj/kg] | [lbf/lb] |
| E | wet bulb temperature | Tw | [degC] | [°F] | | | | | |

| | CODE 2 | SETTING FOR OUTPUT 2 |
|--|--------|----------------------|
| | acc. CODE 1 | |

| | CODE 3 | OUTPUT 1 |
|--|--------|----------|
| | 2 | 0 - 5 V |
| | 3 | 0 - 10 V |
| | 6 | 4 - 20 mA |

| | CODE 4 | OUTPUT 2 |
|--|--------|----------|
| | acc. CODE 3 | |

| | CODE 5 | UNIT of the measured values |
|--|--------|------------------------------|
| | no Code | metric (SI-units) |
| | E01 | no metric |

| | CODE 6 | RANGES FOR TEMPERATURE OUTPUT |
|--|--------|-------------------------------|
| | no Code | standard -20 (-40)...60 (180) degC [-4 (-40)...140 (356) °F] |
| | Txx | others on request |

**Order example: EE30EX-B02K40HA03/AB66:** intrinsically safe humidity/temperature transmitter, separated sensor probe for installation in the Zone-bulkhead, cable length for sensor probe: 2m, cable length for data cable: 40m, feethrough with male tread (HA 01 02 03) / output1: relative humidity, output2: temperature, output1: 4-20 mA, output2: 4-20 mA, metric units, temperature output -40 to 180 degC

## ORDER INFORMATION FOR ACCESSORIES

| | CODE |
|--|------|
| sintered stainless steel filter fot EE30EX | HA 01 01 07 |
| RS 232 interface cable | HA 01 03 01 |
| protection cap for sensor probe | S01 |
| LC-Display | D01 |
| replacement humidity sensor | FE 10 |
| replacement temperature sensor | TE 38 |
| specific test report acc. DIN EN 10204 - 2.3 | HA 01 06 01 |

| | CODE |
|--|------|
| calibration device (without humidity standards) | HA 01 04 01 |
| humidity standards 10 % RH | HA 01 04 10 |
| humidity standards 35 % RH | HA 01 04 35 |
| humidity standards 50 % RH | HA 01 04 50 |
| humidity standards 80 % RH | HA 01 04 80 |
| humidity standards 95 % RH | HA 01 04 95 |
| PTB - Calibration certificate | HA 01 06 02 |