The EE23 is optimized for reliable and cost effective use in industrial applications. In addition to highly accurate measurement of relative humidity (RH) and temperature (T), the sensor also calculates the dew point (Td) and the frost point temperature (Tf).

**Measurement Performance**

The EE23 employs high-end E+E humidity sensing elements manufactured in state-of-the-art thin film technology, which are the prerequisite for outstanding accuracy.

**Long Term Stability**

The E+E proprietary coating protects the sensing elements against corrosive and electrically conductive pollution, which leads to outstanding long-term stability even in harsh environment. With the appropriate choice of filter cap, the EE23 tackles even challenging industrial applications.

**Outputs and Power Supply**

The measured data is available on two voltage or current outputs as well as on the display. Additional features like alarm (relay) output and integrated supply module 100 - 240 V AC facilitate the use of the EE23 in a wide range of applications.

**Easy Installation and Service**

The modular, three parts design of the IP65 / NEMA 4 enclosure, available in polycarbonate or metal, facilitates easy installation, service and replacement. The enclosure consists of the back cover with the terminals for wiring, the pluggable active part with the electronics and the probe, and the front cover. Once installed, the active part of EE23 can be plugged on and off without rewiring. The plastic enclosure is appropriate also for mounting onto DIN rails.

**Remote Probe and Accessories**

The remote probe with cable length up to 10m (32.8 ft) together with a wide choice of accessories such as mounting flanges or brackets, drip water protection or radiation shield allow for easy integration of the EE23 into any measurement task.

**User Configurable**

The user can easily perform a two-point humidity and temperature adjustment. The analogue and alarm outputs can be freely configured.

### Features

- Temperature range -40...180 °C (-40...356 °F)
- Outstanding long term stability
- Calculation of dew point and frost point temperature
- Easy mounting and maintenance
- Alarm output
- Inspection certificate according to DIN EN 10204-3.1

### Protective Sensor Coating

The E+E proprietary sensor coating is a protective layer applied to the sensing elements, their leads and soldering points. The coating substantially extends sensor lifetime and ensures optimal measurement performance in corrosive environment (salts, off-shore applications). Additionally, it improves the sensors’ long term stability in dusty, dirty or oily applications by preventing stray impedance caused by deposits on the active sensor surface or on the electrical connections.
### Technical Data

#### Measurands

**Relative Humidity**
- **Working range**: 0...100 %RH
- **Accuracy**:
  1) Including hysteresis, non-linearity and repeatability, traceable to intern. standards, administrated by NIST, PTB, BEV...
  2) USA & Canada: class 2 supply required, max. supply voltage 30 V DC
  3) Only for types T1, T2, T4

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15...40 °C (5...104 °F)</td>
<td>≤90 %RH ± (1.3 + 0.3 %/°C) %RH</td>
</tr>
<tr>
<td>-15...40 °C (5...104 °F)</td>
<td>&gt;90 %RH ± 2.3 %RH</td>
</tr>
<tr>
<td>-25...70 °C (13...158 °F)</td>
<td>≤ (1.4 + 1 %/°C) %RH</td>
</tr>
<tr>
<td>-40...180 °C (40...356 °F)</td>
<td>≤ (1.5 + 1.5 %/°C) %RH</td>
</tr>
</tbody>
</table>

**Response time** $t_{90}$ with metal grid filter at 20 °C (68 °F) $< 15$ sec.

**Temperature**
- **Probe working range**
  - EE23-T1: -40...60 °C (-40...140 °F)
  - EE23-T2: -40...80 °C (-40...176 °F)
  - EE23-T4: -40...120 °C (-40...248 °F)
  - EE23-T5: -40...180 °C (-40...356 °F)

#### Output Scale Span

<table>
<thead>
<tr>
<th>Humidity</th>
<th>EE23-T1</th>
<th>EE23-T2</th>
<th>EE23-T4</th>
<th>EE23-T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th>EE23-T1</th>
<th>EE23-T2</th>
<th>EE23-T4</th>
<th>EE23-T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-40 (-40)</td>
<td>60 (140)</td>
<td>80 (176)</td>
<td>120 (248)</td>
</tr>
<tr>
<td>Dew point temperature</td>
<td>-40 (-40)</td>
<td>60 (140)</td>
<td>80 (176)</td>
<td>100 (212)</td>
</tr>
<tr>
<td>Frost point temperature</td>
<td>-40 (-40)</td>
<td>0 (32)</td>
<td>0 (32)</td>
<td>0 (32)</td>
</tr>
</tbody>
</table>

#### General

- **Power supply class III**
  - 15 - 35 V DC or 15 - 28 V AC
  - 100 - 240 V AC, 50/60 Hz supply module (optional)

<table>
<thead>
<tr>
<th>Consumption</th>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>for DC supply</td>
<td>≤ 25 mA</td>
<td>(with alarm module ≤ 35 mA)</td>
</tr>
<tr>
<td>for AC supply</td>
<td>≤ 45 mA&lt;sub&gt;max&lt;/sub&gt;</td>
<td>(with alarm module ≤ 70 mA&lt;sub&gt;max&lt;/sub&gt;)</td>
</tr>
<tr>
<td>for DC supply</td>
<td>≤ 55 mA</td>
<td>(with alarm module ≤ 65 mA)</td>
</tr>
<tr>
<td>for AC supply</td>
<td>≤ 100 mA&lt;sub&gt;max&lt;/sub&gt;</td>
<td>(with alarm module ≤ 120 mA&lt;sub&gt;max&lt;/sub&gt;)</td>
</tr>
</tbody>
</table>

- **Enclosure material/Protection rating**
  - Polycarbonate / IP65/NEMA 4X
  - AlSi<sub>9</sub>Cu<sub>3</sub> / IP65/NEMA 4

- **Cable gland**
  - M16x1.5
  - Cable Ø 4.5 - 10 mm (0.18 - 0.39")

- **Electrical connection**
  - Screw terminals max. 1.5 mm² (AWG 16)

- **Working temperature range of electronics**
  - -40...60 °C (-40...140 °F)

- **Working temperature range with display**
  - -30...60 °C (-22...140 °F)

- **Storage temperature range**
  - -40...60 °C (-40...140 °F)

- **Electromagnetic compatibility**
  - EN 61326-1
  - EN 61326-2-3
  - Industrial Environment
  - FCC Part15 Class A
  - ICES-003 Class A

#### Alarm Module

- **Output**
  - SPDT-Switch max. 250 V AC/8A or 28 V DC/8A

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Hysteresis</th>
</tr>
</thead>
<tbody>
<tr>
<td>10...95 %RH</td>
<td>3...15 %RH</td>
</tr>
</tbody>
</table>

#### Notes
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) USA & Canada: class 2 supply required, max. supply voltage 30 V DC
3) Only for types T1, T2, T4
Dimensions  
Values in mm (inch)

- Mounting flange  
- Bracket for installation onto mounting rails*  
- Drip water protection  
- Radiation shield  
- Calibration set (see data sheet “Calibration Kit”)  
- Stainless steel wall mounting clip Ø12 mm (0.5“)

*Note: Only for plastic enclosure

Enclosure:  
Polycarbonate (PC)

Metal

Probes:

EE23-T1  
Probe material: PC

EE23-T4 / EE23-T5  
Probe material: stainless steel

EE23-T2  
Probe material: stainless steel

Accessories  
(For further information, see data sheet “Accessories”)

- Mounting flange  (HA010201)  
- Bracket for installation onto mounting rails*  (HA010203)  
- Drip water protection  (HA010503)  
- Radiation shield  (HA010502)  
- Calibration set (see data sheet “Calibration Kit”)  (HA0104xx)  
- Stainless steel wall mounting clip Ø12 mm (0.5“)  (HA010225)
**Hardware Configuration**

<table>
<thead>
<tr>
<th>Type</th>
<th>Enclosure</th>
<th>Filter</th>
<th>Cable length (incl. probe length)</th>
<th>Electrical connection</th>
<th>Optional features</th>
<th>Output signal</th>
<th>Output 1</th>
<th>Scaling 1 low</th>
<th>Scaling 1 high</th>
<th>Output 2</th>
<th>Scaling 2 low</th>
<th>Scaling 2 high</th>
<th>Display mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Polycarbonate</td>
<td>Plastic - metal grid (up to 120 °C / 248 °F)</td>
<td>2 m (6.6 ft)</td>
<td></td>
<td></td>
<td>0-10 V</td>
<td>Relative humidity RH [%]</td>
<td>0</td>
<td>100</td>
<td>Temperature T [°C]</td>
<td></td>
<td>Measurand output 1 + 2 alternating</td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>Metal (AlSiCu3)</td>
<td>Stainless steel sintered</td>
<td>5 m (16.4 ft)</td>
<td></td>
<td></td>
<td>0-20 mA</td>
<td></td>
<td></td>
<td></td>
<td>Temperature T [°F]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td></td>
<td>PTFE</td>
<td>10 m (32.8 ft)</td>
<td></td>
<td></td>
<td>4-20 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td></td>
<td>Stainless steel grid (up to 180 °C / 356 °F)</td>
<td>65 mm (2.55&quot;)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>200 mm (7.87&quot;)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>400 mm (15.75&quot;)</td>
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<td></td>
</tr>
</tbody>
</table>

**Order Example**

**Ordering Guide**

**Type**
- Remote probe up to 120 °C (248 °F)
- Wall mount

**Enclosure**
- Metal (AlSiCu3)

**Filter**
- Plastic - metal grid

**Cable length**
- 2 m (6.6 ft)

**Probe length**
- 200 mm (7.87")

**Electrical connection**
- Standard

**Optional feature**
- LC Display

**Output signal**
- 0 - 10 V

**Output 1**
- Relative humidity RH [%]
  - Scaling 1 low: 0
  - Scaling 1 high: 100

**Output 2**
- Temperature T [°C]
  - Scaling 2 low: 0
  - Scaling 2 high: 50

**Display mode**
- Measurand output 1 + 2 alternating

**Measurand Code**

<table>
<thead>
<tr>
<th>Relative humidity [%]</th>
<th>10</th>
<th>Dew point Td [°C]</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature [°C]</td>
<td>1</td>
<td>Frost point Tf [°C]</td>
<td>65</td>
</tr>
<tr>
<td>[°F]</td>
<td>2</td>
<td></td>
<td>66</td>
</tr>
</tbody>
</table>

1) For T1, T2 and T4 adjustment changes on the electronics board—see operation manual
2) For T5 adjustment and configuration changes by E+E PCS Software only—see operation manual
3) With electrical connection standard only (no plug options possible) / combination alarm output and integrated power supply is not possible
4) Measurand on display can be selected with push buttons