Safety Instructions

**Memosens COS22E**

**Memosens COS51E**

KOR Ex ia IIC T6... T4 Ga

Safety instructions for electrical apparatus in explosion-hazardous areas
Memosens COS22E
Memosens COS51E

KOR Ex ia IIC T6... T4 Ga

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Associated documentation
This document is an integral part of the Memosens COS22E Operating Instructions BA02145C.
This document is an integral part of the Memosens COS51E Operating Instructions BA02146C.

Supplementary documentation
- Competence Brochure CP00021Z
  - Explosion Protection: Guidelines and General Principles
  - www.endress.com

Identification
The nameplate provides you with the following information on your device:
- Manufacturer identification
- Order code
- Extended order code
- Serial number
- Safety information and warnings

▶ Compare the information on the nameplate with the order.

Ex-approval

*KoreaEx*

Ex ia IIC T6... T4 Ga

Notified body
KTL - Korea Testing Laboratory

Safety instructions
The Memosens COS22E and COS51E oxygen sensors are suitable for use in hazardous areas in accordance with:
*KoreaEx certificates 21-KA4BO-0439X (COS22E) and 21-KA4BO-0440X (COS51E)*

- A maximum ambient temperature of 90 °C (194 °F) must not be exceeded at the sensor head.
- Oxygen sensors for use in hazardous areas have a special conductive O-ring. The electrical connection of the metallic sensor shaft to the conductive mounting location (such as a metallic assembly) is via the O-ring.
- Appropriate measures must be taken to connect the assembly or the mounting location to ground in accordance with the Ex guidelines.
- The plastic housing may only be cleaned with a damp cloth.
- Hazardous area versions of digital sensors with Memosens technology are marked by an orange/red ring on the plug-in head.
- The maximum permitted cable length between the sensor and transmitter is 100 m (330 ft).
- When using devices and sensors, observe the regulations for electrical systems in hazardous areas (IEC 60079-14).
- The procedures for electrical connection described in the Operating Instructions must be followed.
- This device has been developed and manufactured in accordance with the following standards:
  - IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
  - IEC 60079-11:2011 + Cor.:2012 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Only Memosens COS22E:
- Oxygen sensors for use in hazardous areas have a special conductive O-ring. The electrical connection of the metallic sensor shaft to the conductive mounting location (such as a metallic assembly) is via the O-ring.
- Sensors containing parts made of titanium or other light metals must be protected against impact.
- The sensors must not be operated under electrostatically critical process conditions. Avoid strong steam or dust currents that act directly on the connection system.

Only Memosens COS51E:
- The sensors may not be operated under electrostatically critical process conditions in which electrostatic charging of the sensor and the connection system is likely to occur.
- Use of the sensor for its intended purpose in liquids with a conductivity of at least 10 nS/cm can be classified as electrostatically safe.

### Type code

<table>
<thead>
<tr>
<th>Memosens</th>
<th>COS22E-aabbccdde+g</th>
</tr>
</thead>
<tbody>
<tr>
<td>aa</td>
<td>Approval (no ex-relevance)</td>
</tr>
<tr>
<td></td>
<td><strong>KA</strong></td>
</tr>
<tr>
<td></td>
<td>Ex ia IIC T6 ... T4 Ga</td>
</tr>
<tr>
<td>bb</td>
<td>Measuring range (no ex-relevance)</td>
</tr>
<tr>
<td>cc</td>
<td>Cap characteristics</td>
</tr>
<tr>
<td></td>
<td>AA = Stainless steel</td>
</tr>
<tr>
<td></td>
<td>BA = Titanium</td>
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<tr>
<td></td>
<td>CA = Alloy C22</td>
</tr>
<tr>
<td></td>
<td>YY = Special version</td>
</tr>
<tr>
<td>dd</td>
<td>Sensor length (no ex-relevance) max. 600 mm</td>
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</table>
### Memosens COS22E-aabbccdde+g

<table>
<thead>
<tr>
<th>e</th>
<th>Material of O-ring (in the cap) (no ex-relevance)</th>
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</thead>
<tbody>
<tr>
<td>g</td>
<td>Optional = one or more characters determining optional features (no ex-relevance), e.g. test or other certificates/declarations</td>
</tr>
</tbody>
</table>

### Memosens COS51E-aabbcc+g

<table>
<thead>
<tr>
<th>aa</th>
<th>Approval (no ex-relevance)</th>
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<tbody>
<tr>
<td><strong>KA</strong></td>
<td>Ex ia IIC T6 Ga</td>
</tr>
<tr>
<td>bb</td>
<td>Measuring range (no ex-relevance)</td>
</tr>
</tbody>
</table>
| cc | Cap characteristics  
TF = Response time T90, 0.5 minutes  
TN = Response time T90, 3 minutes  
YY = Special version |
| g | Optional = one or more characters determining optional features (no ex-relevance), e.g. test or other certificates/declarations |

### Temperature tables

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Process temperature $T_p$</th>
<th>Ambient temperature $T_a$</th>
</tr>
</thead>
</table>
| COS22E | $-5 \leq T_p \leq 70 \, ^\circ\text{C}$ (T6)  
$-5 \leq T_p \leq 100 \, ^\circ\text{C}$ (T4) | $-25 \leq T_a \leq 70 \, ^\circ\text{C}$ (T6)  
$-25 \leq T_a \leq 70 \, ^\circ\text{C}$ (T4) |
| COS51E | $-5 \leq T_p \leq 60 \, ^\circ\text{C}$ (T6) | $-5 \leq T_a \leq 60 \, ^\circ\text{C}$ (T6) |

The above temperature table applies only under the following installation conditions, which are described in the following graphic → 7. If the installation conditions cannot be met, the maximum process temperature $T_p$ must not exceed the maximum ambient temperature $T_a$.

### Connection Ex specification

The approved Memosens COS22E and Memosens COS51E digital oxygen sensors have an intrinsically safe input with the following parameter set:
The approved Memosens COS22E and Memosens COS51E digital oxygen sensors must be connected to a Memosens cable or cable transmitter with intrinsically safe output with the following parameter:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>$P_o$</td>
<td>max. 180 mW</td>
</tr>
</tbody>
</table>

**Installation conditions**

1. **Limit**
2. Distance between plug-in head (lower edge) and process medium, without ring and thrust collar
3. Process temperature range $T_p$
4. Ambient temperature range $T_a$