General

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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.
# Table of Contents

**General**

- Table of Contents
- 1 Notes about this Documentation
  - 1.1 Gültigkeitsbereich
  - 1.2 Validity of this Documentation
  - 1.3 Copyright
  - 1.4 Symbols
  - 1.5 Number Notation
  - 1.6 Font Conventions

**1 Important Notes**

- 1.1 Legal Bases
  - 1.1.1 Subject to Changes
  - 1.1.2 Personnel Qualifications
  - 1.1.3 Use of the 750 Series in Compliance with Underlying Provisions
  - 1.1.4 Technical Condition of Specified Devices
- 1.2 Safety Advice (Precautions)

**2 Use in Hazardous Environments**

- 2.1 Foreword
- 2.2 Protective Measures
- 2.3 Classification Meeting CENELEC and IEC
  - 2.3.1 Divisions
  - 2.3.2 Explosion Protection Group
  - 2.3.3 Unit Categories
  - 2.3.4 Temperature Classes
  - 2.3.5 Types of Ignition Protection
- 2.4 Classifications Meeting the NEC 500
  - 2.4.1 Divisions
  - 2.4.2 Explosion Protection Groups
  - 2.4.3 Temperature Classes
- 2.5 Application Range
- 2.6 Identification
  - 2.6.1 For Europe according to CENELEC and IEC
  - 2.6.2 For America according to NEC 500
- 2.7 Installation Regulations
  - 2.7.1 Special Conditions for Safe Operation of the ATEX and IEC Ex
    (acc. DEMKO 08 ATEX 142851X and IECEx PTB 07.0064)
  - 2.7.2 Special Conditions for Safe Operation of the Ex i
    (acc. TÜV 07 ATEX 554086 X)
  - 2.7.3 Special Conditions for the Safe Operation of the IEC Ex i
    (acc. TUN 09.0001 X)
  - 2.7.4 ANSI/ISA 12.12.01
- List of Figures
- List of Tables
1 Notes about this Documentation

Note

Keep this documentation!
The operating instructions are part of the product and shall be kept for the entire lifetime of the device. They shall be transferred to each subsequent owner or user of the device. Care must also be taken to ensure that any supplement to these instructions are included, if applicable.

1.1 Gültigkeitsbereich

Die vorliegende Dokumentation gilt für das WAGO-I/O-SYSTEM 750.

1.2 Validity of this Documentation

This documentation is only applicable to the 750-xxx Use in Hazardous Environments WAGO-I/O-SYSTEM 750 series.

The WAGO-I/O-SYSTEM 750750-xxx shall only be installed and operated according to the instructions in this manual and the manuals for the used fieldbus coupler/controller and I/O modules.

NOTICE

Consider power layout of the WAGO-I/O-SYSTEM 750!
In addition to these operating instructions, you will also need the manual for the used fieldbus coupler/controller and I/O modules, which can be downloaded at www.wago.com. There, you can obtain important information including information on electrical isolation, system power and supply specifications.

1.3 Copyright

This Manual, including all figures and illustrations, is copyright-protected. Any further use of this Manual by third parties that violate pertinent copyright provisions is prohibited. Reproduction, translation, electronic and phototechnical filing/archiving (e.g., photocopying) as well as any amendments require the written consent of WAGO Kontakttechnik GmbH & Co. KG, Minden, Germany. Non-observance will involve the right to assert damage claims.
1.4 Symbols

**DANGER**

Personal Injury!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

**DANGER**

Personal Injury Caused by Electric Current!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**

Personal Injury!
Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

Personal Injury!
Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**NOTICE**

Damage to Property!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

**NOTICE**

Damage to Property Caused by Electrostatic Discharge (ESD)!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

**Note**

Important Note!
Indicates a potential malfunction which, if not avoided, however, will not result in damage to property.
Additional Information:
Refers to additional information which is not an integral part of this documentation (e.g., the Internet).
1.5 Number Notation

Table 1: Number Notation

<table>
<thead>
<tr>
<th>Number code</th>
<th>Example</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal</td>
<td>100</td>
<td>Normal notation</td>
</tr>
<tr>
<td>Hexadecimal</td>
<td>0x64</td>
<td>C notation</td>
</tr>
<tr>
<td>Binary</td>
<td>'100'</td>
<td>In quotation marks, nibble separated with dots (.)</td>
</tr>
<tr>
<td></td>
<td>'0110.0100'</td>
<td></td>
</tr>
</tbody>
</table>

1.6 Font Conventions

Table 2: Font Conventions

<table>
<thead>
<tr>
<th>Font type</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>italic</td>
<td>Names of paths and data files are marked in italic-type. e.g.: C:\Programme\WAGO-I/O-CHECK</td>
</tr>
<tr>
<td>Menu</td>
<td>Menu items are marked in bold letters. e.g.: Save</td>
</tr>
<tr>
<td>&gt;</td>
<td>A greater-than sign between two names means the selection of a menu item from a menu. e.g.: File &gt; New</td>
</tr>
<tr>
<td>Input</td>
<td>Designation of input or optional fields are marked in bold letters, e.g.: Start of measurement range</td>
</tr>
<tr>
<td>“Value”</td>
<td>Input or selective values are marked in inverted commas. e.g.: Enter the value “4 mA” under Start of measurement range.</td>
</tr>
<tr>
<td>[Button]</td>
<td>Pushbuttons in dialog boxes are marked with bold letters in square brackets. e.g.: [Input]</td>
</tr>
<tr>
<td>[Key]</td>
<td>Keys are marked with bold letters in square brackets. e.g.: [F5]</td>
</tr>
</tbody>
</table>
2 Important Notes

This section includes an overall summary of the most important safety requirements and notes that are mentioned in each individual section. To protect your health and prevent damage to devices as well, it is imperative to read and carefully follow the safety guidelines.

2.1 Legal Bases

2.1.1 Subject to Changes

WAGO Kontakttechnik GmbH & Co. KG reserves the right to provide for any alterations or modifications that serve to increase the efficiency of technical progress. WAGO Kontakttechnik GmbH & Co. KG owns all rights arising from the granting of patents or from the legal protection of utility patents. Third-party products are always mentioned without any reference to patent rights. Thus, the existence of such rights cannot be excluded.

2.1.2 Personnel Qualifications

All sequences implemented on Series 750 devices may only be carried out by electrical specialists with sufficient knowledge in automation. The specialists must be familiar with the current norms and guidelines for the devices and automated environments.

All changes to the coupler or controller should always be carried out by qualified personnel with sufficient skills in PLC programming.

2.1.3 Use of the 750 Series in Compliance with Underlying Provisions

Couplers, controllers and I/O modules found in the modular WAGO-I/O-SYSTEM 750 receive digital and analog signals from sensors and transmit them to the actuators or higher-level control systems. Using programmable controllers, the signals can also be (pre-)processed.

The components have been developed for use in an environment that meets the IP20 protection class criteria. Protection against finger injury and solid impurities up to 12.5 mm diameter is assured; protection against water damage is not ensured. Unless otherwise specified, operation of the components in wet and dusty environments is prohibited.

Appropriate housing (per 94/9/EG) is required when operating the WAGO-I/O-SYSTEM 750 in hazardous environments. Please note that a prototype test certificate must be obtained that confirms the correct installation of the system in a housing or switch cabinet.
2.1.4 Technical Condition of Specified Devices

The components to be supplied Ex Works, are equipped with hardware and software configurations, which meet the individual application requirements. WAGO Kontakttechnik GmbH & Co. KG will be exempted from any liability in case of changes in hardware or software as well as to non-compliant usage of components.

Please send your request for modified and new hardware or software configurations directly to WAGO Kontakttechnik GmbH & Co. KG.
2.2 Safety Advice (Precautions)

For installing and operating purposes of the relevant device to your system the following safety precautions shall be observed:

DANGER

Do not work on components while energized!
All power sources to the device shall be switched off prior to performing any installation, repair or maintenance work.

DANGER

Installation only in appropriate housings, cabinets or in electrical operation rooms!
The WAGO-I/O-SYSTEM 750 and its components are an open system. As such, install the system and its components exclusively in appropriate housings, cabinets or in electrical operation rooms. Allow access to such equipment and fixtures to authorized, qualified staff only by means of specific keys or tools.

NOTICE

Not for use in telecommunication circuits!
Only use devices equipped with ETHERNET or RJ-45 connectors in LANs. Never connect these devices with telecommunication networks.

NOTICE

Replace defective or damaged devices!
Replace defective or damaged device/module (e.g., in the event of deformed contacts), since the long-term functionality of fieldbus station involved can no longer be ensured.

NOTICE

Protect the components against materials having seeping and insulating properties!
The components are not resistant to materials having seeping and insulating properties such as: aerosols, silicones and triglycerides (found in some hand creams). If you cannot exclude that such materials will appear in the component environment, then install the components in an enclosure being resistant to the above-mentioned materials. Clean tools and materials are imperative for handling devices/modules.
**NOTICE**

Cleaning only with permitted materials!
Clean soiled contacts using oil-free compressed air or with ethyl alcohol and leather cloths.

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**NOTICE**

Do not use any contact spray!
Do not use any contact spray. The spray may impair contact area functionality in connection with contamination.

---

**NOTICE**

Do not reverse the polarity of connection lines!
Avoid reverse polarity of data and power supply lines, as this may damage the devices involved.

---

**NOTICE**

Avoid electrostatic discharge!
The devices are equipped with electronic components that you may destroy by electrostatic discharge when you touch. Pay attention while handling the devices to good grounding of the environment (persons, job and packing).
3 Use in Hazardous Environments

3.1 Foreword

Today’s development shows that many chemical and petrochemical companies have production plants, production, and process automation machines in operation which use gas-air, vapor-air and dust-air mixtures which can be explosive. For this reason, the electrical components used in such plants and systems must not pose a risk of explosion resulting in injury to persons or damage to property. This is backed by law, directives or regulations on a national and international scale. The following basic explosion protection related terms have been defined.

3.2 Protective Measures

Primarily, explosion protection describes how to prevent the formation of an explosive atmosphere. For instance by avoiding the use of combustible liquids, reducing the concentration levels, ventilation measures, to name but a few. But there are a large number of applications, which do not allow the implementation of primary protection measures. In such cases, the secondary explosion protection comes into play. Following is a detailed description of such secondary measures.
3.3 Classification Meeting CENELEC and IEC

The specifications outlined here are valid for use in Europe and are based on the following standards: EN60079... of CENELEC (European Committee for Electrotechnical Standardization). On an international scale, these are reflected by the IEC 60079-... standards of the IEC (International Electrotechnical Commission).

3.3.1 Divisions

Explosive environments are areas in which the atmosphere can potentially become explosive. The term explosive means a special mixture of ignitable substances existing in the form of air-borne gases, fumes, mist or dust under atmospheric conditions which, when heated beyond a tolerable temperature or subjected to an electric arc or sparks, can produce explosions. Explosive zones have been created to describe the concentrations level of an explosive atmosphere. This division, based on the probability of an explosion occurring, is of great importance both for technical safety and feasibility reasons. Knowing that the demands placed on electrical components permanently employed in an explosive environment have to be much more stringent than those placed on electrical components that are only rarely and, if at all, for short periods, subject to a dangerous explosive environment.

Explosive areas resulting from gases, fumes or mist:

- Zone 0 areas are subject to an explosive atmosphere (> 1000 h/year) continuously or for extended periods.

- Zone 1 areas can expect the occasional occurrence of an explosive atmosphere (> 10 h ≤ 1000 h/year).

- Zone 2 areas can expect the rare or short-term occurrence of an explosive atmosphere (> 0 h ≤ 10 h/year).

Explosive areas subject to air-borne dust:

- Zone 20 areas are subject to an explosive atmosphere (> 1000 h/year) continuously or for extended periods.

- Zone 21 areas can expect the occasional occurrence of an explosive atmosphere (> 10 h ≤ 1000 h/year).

- Zone 22 areas can expect the rare or short-term occurrence of an explosive atmosphere (> 0 h ≤ 10 h/year).
### 3.3.2 Explosion Protection Group

In addition, the electrical components for explosive areas are subdivided into two groups:

**Group I**
Group I includes electrical components for use in fire-damp endangered mine structures.

**Group II**
Group II includes electrical components for use in all other explosive environments. This group is further subdivided by pertinent combustible gases in the environment.

Subdivision IIA, IIB and IIC takes into account that different materials/substances/gases have various ignition energy characteristic values. For this reason the three sub-groups are assigned representative types of gases:

- IIA – Propane
- IIB – Ethylene
- IIC – Hydrogen

<table>
<thead>
<tr>
<th>Minimal Ignition Energy of Representative Types of Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosion group</td>
</tr>
<tr>
<td>Gases</td>
</tr>
<tr>
<td>Ignition energy (µJ)</td>
</tr>
</tbody>
</table>

Hydrogen being commonly encountered in chemical plants, frequently the explosion group IIC is requested for maximum safety.
3.3.3 Unit Categories

Moreover, the areas of use (zones) and the conditions of use (explosion groups) are subdivided into categories for the electrical operating means:

<table>
<thead>
<tr>
<th>Unit category</th>
<th>Explosion group</th>
<th>Area of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>I</td>
<td>Fire-damp protection</td>
</tr>
<tr>
<td>M2</td>
<td>I</td>
<td>Fire-damp protection</td>
</tr>
<tr>
<td>1G</td>
<td>II</td>
<td>Zone 0 Explosive environment by gas, fumes or mist</td>
</tr>
<tr>
<td>2G</td>
<td>II</td>
<td>Zone 1 Explosive environment by gas, fumes or mist</td>
</tr>
<tr>
<td>3G</td>
<td>II</td>
<td>Zone 2 Explosive environment by gas, fumes or mist</td>
</tr>
<tr>
<td>1D</td>
<td>II</td>
<td>Zone 20 Explosive environment by dust</td>
</tr>
<tr>
<td>2D</td>
<td>II</td>
<td>Zone 21 Explosive environment by dust</td>
</tr>
<tr>
<td>3D</td>
<td>II</td>
<td>Zone 22 Explosive environment by dust</td>
</tr>
</tbody>
</table>

3.3.4 Temperature Classes

The maximum surface temperature for electrical components of explosion protection group I is 150 °C (danger due to coal dust deposits) or 450 °C (if there is no danger of coal dust deposit).

In line with the maximum surface temperature for all ignition protection types, the electrical components are subdivided into temperature classes, as far as electrical components of explosion protection group II are concerned.

Here the temperatures refer to a surrounding temperature of 40 °C for operation and testing of the electrical components. The lowest ignition temperature of the existing explosive atmosphere must be higher than the maximum surface temperature.

<table>
<thead>
<tr>
<th>Temperature Classes</th>
<th>Maximum Surface Temperature</th>
<th>Ignition Temperature of the Combustible Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>450 °C</td>
<td>&gt; 450 °C</td>
</tr>
<tr>
<td>T2</td>
<td>300 °C</td>
<td>&gt; 300 °C ≤ 450 °C</td>
</tr>
<tr>
<td>T3</td>
<td>200 °C</td>
<td>&gt; 200 °C ≤ 300 °C</td>
</tr>
<tr>
<td>T4</td>
<td>135 °C</td>
<td>&gt; 135 °C ≤ 200 °C</td>
</tr>
<tr>
<td>T5</td>
<td>100 °C</td>
<td>&gt; 100 °C ≤ 135 °C</td>
</tr>
<tr>
<td>T6</td>
<td>85 °C</td>
<td>&gt; 85 °C ≤ 100 °C</td>
</tr>
</tbody>
</table>

The following table represents the division and attributes of the materials to the temperature classes and material groups in percent:
### 3.3.5 Types of Ignition Protection

Ignition protection defines the special measures to be taken for electrical components in order to prevent the ignition of surrounding explosive atmospheres. For this reason a differentiation is made between the following types of ignition protection:

**Table 7: Types of Ignition Protection**

<table>
<thead>
<tr>
<th>Identification</th>
<th>CENELEC standard</th>
<th>IEC standard</th>
<th>Explanation</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex o</td>
<td>EN 60079-6</td>
<td>IEC 60079-6</td>
<td>Oil encapsulation</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex p</td>
<td>EN 60079-2</td>
<td>IEC 60079-2</td>
<td>Overpressure encapsulation</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex q</td>
<td>EN 60079-5</td>
<td>IEC 60079-5</td>
<td>Sand encapsulation</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex d</td>
<td>EN 60079-1</td>
<td>IEC 60079-1</td>
<td>Pressure resistant encapsulation</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex e</td>
<td>EN 60079-7</td>
<td>IEC 60079-7</td>
<td>Increased safety</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex m</td>
<td>EN 60079-18</td>
<td>IEC 60079-18</td>
<td>Cast encapsulation</td>
<td>Zone 1 + 2</td>
</tr>
<tr>
<td>Ex i</td>
<td>EN 60079-11 (Device)</td>
<td>IEC 60079-11</td>
<td>Intrinsic safety</td>
<td>Zone 0 + 1 + 2</td>
</tr>
<tr>
<td>Ex n</td>
<td>EN 60079-15</td>
<td>IEC 60079-15</td>
<td>Electrical components for zone 2 (see below)</td>
<td>Zone 2</td>
</tr>
</tbody>
</table>

Ignition protection “n” describes exclusively the use of explosion protected electrical components in zone 2. This zone encompasses areas where explosive atmospheres can only be expected to occur rarely or short-term. It represents the transition between the area of zone 1, which requires an explosion protection and safe area in which for instance welding is allowed at any time.

Regulations covering these electrical components are being prepared on a worldwide scale. The standard EN 60079-15 allows electrical component manufacturers to obtain certificates from the PTB in Germany, certifying that the tested components meet the above mentioned standards draft.

Type “n” ignition protection additionally requires electrical components to be marked with the following extended identification:

- **Non-sparking apparatus "nA"**

  Apparatus, which is designed so that the risk of occurrence of arcs or sparks,
which can give rise to an ignition hazard during normal operation, is minimized.

- **Apparatus with protected contacts "nC"**
  Apparatus with contacts, which close and open a possibly ignitable circuit, in which the contact mechanism is designed so that ignition of a defined potentially explosive atmosphere is prevented.

- **Energy-limited apparatus "nL."**
  Electrical apparatus, in which circuits and components are designed in accordance with the concept of energy limitation.

---

**Information**

**Additional Information**
For more detailed information please refer to the national and/or international standards, directives and regulations!
3.4 Classifications Meeting the NEC 500

The following classifications according to NEC 500 (National Electric Code) are valid for North America.

3.4.1 Divisions

The "Divisions" describe the degree of probability of whatever type of dangerous situation occurring. Here the following assignments apply:

Table 8: Divisions

<table>
<thead>
<tr>
<th>Division</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division 1</td>
<td>Encompasses areas in which explosive atmospheres are to be expected occasionally ($&gt; 10 \text{ h} \leq 1000 \text{ h/year}$) as well as continuously and long-term ($&gt; 1000 \text{ h/year}$).</td>
</tr>
<tr>
<td>Division 2</td>
<td>Encompasses areas in which explosive atmospheres can be expected rarely and short-term ($&gt;0 \text{ h} \leq 10 \text{ h/year}$).</td>
</tr>
</tbody>
</table>

3.4.2 Explosion Protection Groups

Electrical components for explosion endangered areas are subdivided in three danger categories:

Table 9: Explosion Protection Groups

<table>
<thead>
<tr>
<th>Class</th>
<th>Groups</th>
</tr>
</thead>
</table>
| Class I (gases and fumes): | Group A (Acetylene)  
Group B (Hydrogen)  
Group C (Ethylene)  
Group D (Methane) |
| Class II (dust): | Group E (Metal dust)  
Group F (Coal dust)  
Group G (Flour, starch and cereal dust) |
| Class III (fibers): | No sub-groups |
3.4.3 Temperature Classes

Electrical components for explosive areas are differentiated by temperature classes:

Table 10: Temperature classes

<table>
<thead>
<tr>
<th>Temperature classes</th>
<th>Maximum surface temperature</th>
<th>Ignition temperature of the combustible materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>450 °C</td>
<td>&gt; 450 °C</td>
</tr>
<tr>
<td>T2</td>
<td>300 °C</td>
<td>&gt; 300 °C to 450 °C</td>
</tr>
<tr>
<td>T2A</td>
<td>280 °C</td>
<td>&gt; 280 °C to 300 °C</td>
</tr>
<tr>
<td>T2B</td>
<td>260 °C</td>
<td>&gt; 260 °C to 280 °C</td>
</tr>
<tr>
<td>T2C</td>
<td>230 °C</td>
<td>&gt; 230 °C to 260 °C</td>
</tr>
<tr>
<td>T2D</td>
<td>215 °C</td>
<td>&gt; 215 °C to 230 °C</td>
</tr>
<tr>
<td>T3</td>
<td>200 °C</td>
<td>&gt; 200 °C to 215 °C</td>
</tr>
<tr>
<td>T3A</td>
<td>180 °C</td>
<td>&gt; 180 °C to 200 °C</td>
</tr>
<tr>
<td>T3B</td>
<td>165 °C</td>
<td>&gt; 165 °C to 180 °C</td>
</tr>
<tr>
<td>T3C</td>
<td>160 °C</td>
<td>&gt; 160 °C to 165 °C</td>
</tr>
<tr>
<td>T4</td>
<td>135 °C</td>
<td>&gt; 135 °C to 160 °C</td>
</tr>
<tr>
<td>T4A</td>
<td>120 °C</td>
<td>&gt; 120 °C to 135 °C</td>
</tr>
<tr>
<td>T5</td>
<td>100 °C</td>
<td>&gt; 100 °C to 120 °C</td>
</tr>
<tr>
<td>T6</td>
<td>85 °C</td>
<td>&gt; 85 °C to 100 °C</td>
</tr>
</tbody>
</table>
3.5 Application Range

The WAGO-I/O-SYSTEM 750 (electrical equipment) is designed for use in Zone 2 hazardous areas.

The following sections include both the general identification of components (devices) and the installation regulations to be observed. The individual subsections of the "Installation Regulations" section must be taken into account if the I/O module has the required approval or is subject to the range of application of the ATEX directive.
3.6 Identification

3.6.1 For Europe according to CENELEC and IEC

![Labeling Example](image1.png)

Figure 1: Example for lateral labeling of bus modules

![Text Printing](image2.png)

Figure 2: Printing on text detail in accordance with CENELEC and IEC

Table 11: Description of Printing on Text

<table>
<thead>
<tr>
<th>Printing on Text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEMKO 08 ATEX 142851 X</td>
<td>Approval body and/or number of the examination</td>
</tr>
<tr>
<td>IECEx PTB 07.0064X</td>
<td>certificate</td>
</tr>
<tr>
<td>I M2 / II 3 GD Ex nA DC T4</td>
<td>Explosion protection group and Unit category</td>
</tr>
<tr>
<td>Ex nA</td>
<td>Type of ignition and extended identification</td>
</tr>
<tr>
<td>IIC</td>
<td>Explosion protection group</td>
</tr>
<tr>
<td>T4</td>
<td>Temperature class</td>
</tr>
</tbody>
</table>
Figure 3: Example of side marking of Ex i and IEC Ex i approved I/O modules

TUEV 07 ATEX554086 X
II 3(1) D Ex tD [iaD] A22 IP6X T135°C
I(M2) [Ex ia] I
II 3(1) G Ex nA [ia] IIC T4
TUN 09.0001X
Ex tD [iaD] A22 IP6X T135°C
[Ex ia] I
Ex nA [ia] IIC T4

Figure 4: Inscription text detail acc. CENELEC and IEC
Table 12: Description of the inscription

<table>
<thead>
<tr>
<th>Inscription text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TÜV 07 ATEX 554086 X TUN 09.0001X</td>
<td>Approving authority or certificate numbers</td>
</tr>
</tbody>
</table>

**Dust**

<table>
<thead>
<tr>
<th>Inscription text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Device group: All except mining</td>
</tr>
<tr>
<td>3(1)D</td>
<td>Device category: Zone 22 device (Zone 20 subunit)</td>
</tr>
<tr>
<td>Ex</td>
<td>Explosion protection mark</td>
</tr>
<tr>
<td>tD</td>
<td>Protection by enclosure</td>
</tr>
<tr>
<td>[iaD]</td>
<td>Approved in accordance with &quot;Dust intrinsic safety&quot; standard</td>
</tr>
<tr>
<td>A22</td>
<td>Surface temperature determined according to Procedure A, use in Zone 22</td>
</tr>
<tr>
<td>IP6X</td>
<td>Dust-tight (totally protected against dust)</td>
</tr>
<tr>
<td>T 135°C</td>
<td>Max. surface temp. of the enclosure (no dust bin)</td>
</tr>
</tbody>
</table>

**Mining**

<table>
<thead>
<tr>
<th>Inscription text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (M2)</td>
<td>Device group: Mining</td>
</tr>
<tr>
<td>[Ex ia]</td>
<td>Explosion protection: Mark with category of type of protection intrinsic safety: Even safe when two errors occur</td>
</tr>
<tr>
<td>I</td>
<td>Device group: Mining</td>
</tr>
</tbody>
</table>

**Gases**

<table>
<thead>
<tr>
<th>Inscription text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Device group: All except mining</td>
</tr>
<tr>
<td>3(1)G</td>
<td>Device category: Zone 2 device (Zone 0 subunit)</td>
</tr>
<tr>
<td>Ex</td>
<td>Explosion protection mark</td>
</tr>
<tr>
<td>nA</td>
<td>Type of protection: Non-sparking operating equipment</td>
</tr>
<tr>
<td>[ia]</td>
<td>Category of type of protection intrinsic safety: Even safe when two errors occur</td>
</tr>
<tr>
<td>IIC</td>
<td>Explosion Group</td>
</tr>
<tr>
<td>T4</td>
<td>Temperature class: Max. surface temperature 135°C</td>
</tr>
</tbody>
</table>
3.6.2 For America according to NEC 500

Figure 5: Example for lateral labeling of bus modules

Figure 6: Printing on text detail in accordance with NEC

Table 13: Description of Printing on

<table>
<thead>
<tr>
<th>Printing on Text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 1</td>
<td>Explosion protection group (condition of use category)</td>
</tr>
<tr>
<td>DIV 2</td>
<td>Area of application (zone)</td>
</tr>
<tr>
<td>Grp. ABCD</td>
<td>Explosion group (gas group)</td>
</tr>
<tr>
<td>Optemp code T4</td>
<td>Temperature class</td>
</tr>
</tbody>
</table>
3.7  Installation Regulations

In the Federal Republic of Germany, various national regulations for the installation in explosive areas must be taken into consideration. The basis for this forms the working reliability regulation, which is the national conversion of the European guideline 99/92/E6. They are complemented by the installation regulation EN 60079-14. The following are excerpts from additional VDE regulations:

Table 14: VDE Installation Regulations in Germany

| DIN VDE 0100 | Installation in power plants with rated voltages up to 1000 V |
| DIN VDE 0101 | Installation in power plants with rated voltages above 1 kV |
| DIN VDE 0800 | Installation and operation in telecommunication plants including information processing equipment |
| DIN VDE 0185 | Lightning protection systems |

The USA and Canada have their own regulations. The following are excerpts from these regulations:

Table 15: Installation Regulations in USA and Canada

| NFPA 70 | National Electrical Code Art. 500 Hazardous Locations |
| ANSI/ISA-RP 12.6-1987 | Recommended Practice |
| C22.1 | Canadian Electrical Code |

---

**NOTICE**

Notice the following points

When using the WAGO-I/O SYSTEM 750 (electrical operation) with Ex approval, the following points are mandatory:
3.7.1 Special Conditions for Safe Operation of the ATEX and IEC Ex (acc. DEMKO 08 ATEX 142851X and IECEx PTB 07.0064)

The fieldbus-independent I/O modules of the WAGO-I/O-SYSTEMs 750-.../...-... Must be installed in an environment with degree of pollution 2 or better. In the final application, the I/O modules must be mounted in an enclosure with IP 54 degree of protection at a minimum with the following exceptions:

- I/O modules 750-440, 750-609 and 750-611 must be installed in an IP 64 minimum enclosure.
- I/O module 750-540 must be installed in an IP 64 minimum enclosure for 230 V AC applications.
- I/O module 750-440 may be used up to max. 120 V AC.

When used in the presence of combustible dust, all devices and the enclosure shall be fully tested and assessed in compliance with the requirements of IEC 61241-0:2004 and IEC 61241-1:2004.

I/O modules fieldbus plugs or fuses may only be installed, added, removed or replaced when the system and field supply is switched off or the area exhibits no explosive atmosphere.

DIP switches, coding switches and potentiometers that are connected to the I/O module may only be operated if an explosive atmosphere can be ruled out.

I/O module 750-642 may only be used in conjunction with antenna 758-910 with a max. cable length of 2.5 m.

To exceed the rated voltage no more than 40%, the supply connections must have transient protection.

The permissible ambient temperature range is -20 °C to +55 °C.
3.7.2 Special Conditions for Safe Operation of the Ex i (acc. TÜV 07 ATEX 554086 X)

1. For operation as a Category 3 Device (in Zone 2 or 22), the WAGO-I/O-SYSTEM 750-*** must be mounted in an enclosure that fulfills the requirements of the directive 94/9/EG and the relevant standards (see designation) EN 60079-0, EN 60079-11, EN 60079-15, EN 61241-0 and EN 61241-1. For operation as a Group I Category M2 device, the device must be mounted in a housing that ensures adequate protection in accordance with EN 61241-0 and EN 61241-1. A declaration of conformity according to Appendix X of Directive 94/9/EG must confirm the correct installation of the devices above in the enclosure or switchgear cabinet.

2. If the interface circuits are operated without the fieldbus coupler station of type 750-3../...-... (DEMKO 08 ATEX 142851 X), then measures must be taken outside of the device so that the rated voltage will not be exceeded by more than 40% due to temporary faults.

3. DIP switches, coding switches and potentiometers that are connected to the module may only be operated if an explosive atmosphere can be ruled out.

4. Non-intrinsically safe circuits may only be connected and disconnected for installation, maintenance and repair. Explosive atmosphere and installation, maintenance or repair occurring simultaneously must be ruled out.

5. For types 750-606, 750-625/000-001, 750-487/003-000, 750-484, the following must be taken into account: The interface circuits must be limited to overvoltage category I/II/III (electrical circuits without power supply/electrical circuits with power supply) as defined in EN 60664-1.

6. The permissible ambient temperature range is -20 °C to +55 °C.
3.7.3 Special Conditions for the Safe Operation of the IEC Ex i (acc. TUN 09.0001 X)

1. For operation as a Dc or Gc device (in Zone 2 or 22), the WAGO-I/O-SYSTEM 750-*** must be mounted in an enclosure that fulfills the requirements for a device of the relevant standards (see designation) IEC 60079-0, IEC 60079-11, IEC 60079-15, IEC 61241-0 and IEC 61241-1. For operation as a Group I Category M2 device, the device must be mounted in a housing that ensures adequate protection in accordance with IEC 61241-0 and IEC 61241-1. A declaration of conformity must confirm compliance with these requirements and correct installation of the devices above in the enclosure or switchgear cabinet by an Ex certification authority.

2. Outside the device, measures must be taken so that the rated voltage will not be exceeded by more than 40% due to temporary faults.

3. DIP switches, coding switches and potentiometers that are connected to the module may only be operated if an explosive atmosphere can be ruled out.

4. Non-intrinsically safe circuits may only be connected and disconnected for installation, maintenance and repair. Explosive atmosphere and installation, maintenance or repair occurring simultaneously must be ruled out.

5. For types 750-606, 750-625/000-001, 750-487/003-000, 750-484, the following must be taken into account: The interface circuits must be limited to overvoltage category I/II/III (electrical circuits without power supply/electrical circuits with power supply) as defined in EN 60664-1.

6. The permissible ambient temperature range is -20 °C to +55 °C.
3.7.4 **ANSI/ISA 12.12.01**

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only.

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**NOTICE**

Explosion hazard!
Explosion hazard - substitution of components may impair suitability for Class I, Div. 2.

---

**NOTICE**

Disconnect device when power is off and only in a non-hazardous area!
Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

When a fuse is provided, the following marking shall be provided:
"A switch suitable for the location where the equipment is installed shall be provided to remove the power from the fuse".
The switch need not be integrated in the equipment.

For devices with Ethernet connectors:
"Only for use in LAN, not for connection to telecommunication circuits".

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**NOTICE**

Use only with antenna module 758-910!
Use Module 750-642 only with antenna module 758-910.

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**Information**

Additional Information
Proof of certification is available on request. Also take note of the information given on the module technical information sheet. The Instruction Manual, containing these special conditions for safe use, must be readily available to the user.
List of Figures

Figure 1: Example for lateral labeling of bus modules ........................................ 22
Figure 2: Printing on text detail in accordance with CENELEC and IEC ............... 22
Figure 3: Example of side marking of Ex i and IEC Ex i approved I/O modules. 23
Figure 4: Inscription text detail acc. CENELEC and IEC ................................. 23
Figure 5: Example for lateral labeling of bus modules ........................................ 25
Figure 6: Printing on text detail in accordance with NEC ................................. 25
List of Tables

Table 1: Number Notation ........................................................................................................ 8
Table 2: Font Conventions .................................................................................................... 8
Table 3: Minimal ignition energy of representative types of gases ............................. 15
Table 4: Unit categories ........................................................................................................ 16
Table 5: Temperature classes ............................................................................................... 16
Table 6: Material groups in percent ..................................................................................... 17
Table 7: Types of Ignition Protection .................................................................................. 17
Table 8: Divisions .................................................................................................................. 19
Table 9: Explosion Protection Groups ................................................................................ 19
Table 10: Temperature classes ............................................................................................ 20
Table 11: Description of Printing on .................................................................................... 22
Table 12: Description of the inscription ............................................................................... 24
Table 13: Description of Printing on .................................................................................... 25
Table 14: VDE Installation Regulations in Germany ......................................................... 26
Table 15: Installation Regulations in USA and Canada ....................................................... 26