Tighten all screws of the enclosure/enclosure cover with the appropriate torque.

Ensure that the terminals are in good condition and are not damaged or corroded.

Observe only one conductor per terminal.

Observe the tightening torque of the terminal screws.

Close all unused cable glands with the appropriate sealing plugs.

Close all unused enclosure holes with the appropriate stopping plugs.

Observe IEC/EN 60079-14 during operation.

If rubber gaskets are used on the terminals, ensure that the gaskets are not deformed or damaged.

Fabricate the additional thru-holes with an appropriate tooling method.

Mount the enclosure with the appropriate mounting holes in position (1) and (2). Do not mount the enclosure with shown mounting holes in position (3) and (4).

The requirements of the IEC/EN 60079-31 regarding excessive dust deposits must be considered by the user.

Mounting and Installation

Ensure the enclosure is not damaged, distorted, or corroded.

Ensure that all seals are clean, undamaged, and correctly fitted.

Calculate the minimum distance from the center of the additional thru-hole to the center of an already existing adjacent thru-hole by means of one of the following formulas:

1. Calculation via diameters

   $$	ext{Minimum distance between centers} = 1.5 \times (\text{HSN} + \text{HSA})/2$$

2. Calculation via widths across centers

   $$\text{Minimum distance between centers} = 1.2 \times (\text{WCN} + \text{WCA})/2$$

Fabricate the additional thru-holes with an appropriate tooling method.

Ensure the thru-hole diameters are fitting to the gaskets and cable glands to be installed.

Ensure the enclosure surfaces around the thru-holes are undamaged in order to maintain the IP-protection.

It is allowed to add terminals in accordance with the maximum permitted power dissipation. For calculation and terminal capacity tables please refer to below section „Maximum Terminal Capacity.“

Determine if the space needed for the additional holes does not affect the stability of the enclosure wall and therefore the effectiveness of the gasket system.

In case of doubts consult Pepperl+Fuchs.

Maintain a minimum distance to the enclosure rims of 5 mm.

Maintain a minimum distance to the enclosure bottom of 18.5 mm.

Refer to the following formulas:

1. Calculation via diameters

   $$\text{HSN} = \text{diameter of adjacent thru-hole}$$

   $$\text{HSA} = \text{diameter of additional thru-hole}$$

   $$\text{Minimum distance between centers} = 1.5 \times (\text{HSN} + \text{HSA})/2$$

2. Calculation via widths across centers

   $$\text{WCN} = \text{width across centers of adjacent cable gland}$$

   $$\text{WCA} = \text{width across centers of additional cable gland}$$

   $$\text{Minimum distance between centers} = 1.2 \times (\text{WCN} + \text{WCA})/2$$

Intended Use

The terminal boxes are used to distribute electrical energy and electrical signals in hazardous areas. They must be installed in fixed installations. Intended use includes observing these operating instructions and the other applicable documents, e.g. the data sheet. Any other use of the terminal boxes is not allowed.

Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator. The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the device. The trained and qualified personnel must have read and understood the instruction manual.

Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas. The corresponding data sheets, manuals, declarations of conformity, EC-type-examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

Requirements for Cable Glands:

Only use cable glands that are mutually certified for the application.

Ensure that the degree of protection is not violated by the cable glands.

Ground metal cable glands.

In order to guarantee the temperature classes, ensure that power dissipation is lower than the entry point temperature stated in the certificate. Most of the power dissipation arises from current flowing in the cables.

For terminal boxes installed in ambient temperatures above +40 °C, the cable entry point temperature may rise 40K above the ambient temperature when the maximum allowed power is dissipated. Cable with a suitable temperature rating must be selected.

In case of mixed Ex / Ex I arrangements, ensure the required minimum distances according to IEC/EN 60079-11.

Requirements for Gaskets:

The requirements of the IEC/EN 60079-11 regarding excessive dust deposits must be considered by the user.

Safety-relevant markings are found on the nameplate supplied. Ensure that the nameplate is present and legible. Take the ambient conditions into account.

The permitted ambient temperatures of the built-in components must not be exceeded.

Ensure that the enclosure is not damaged, distorted, or corroded.

Mount the enclosure on concrete use expansion anchors. When mounting the enclosure to a steel framework use vibration-resistant mounting material.

Observe the installation instructions according to IEC/EN 60079-14.

If you intend to install the device or enclosure in areas that may be exposed to aggressive substances, ensure that the stated surface materials are compatible with these substances. If required, contact Pepperl+Fuchs for further information.

The requirements of the IEC/EN 60079-31 regarding excessive dust deposits must be considered by the user.

Ensure that the enclosure is not damaged, distorted, or corroded.

Ensure that the terminals are in good condition and are not damaged or corroded.

Observe only one conductor per terminal.

Observe the tightening torque of the terminal screws.

Use the shortest possible cable lengths and avoid small core cross sections.

Observe the minimum bending radius of the conductors.

When mounting the conductors the insulation must reach up to the terminal.

When stranding conductors, crimp wire end ferrules on the conductor ends.

Unused cables and connection lines must be either connected to terminals or securely tied down and isolated.

Insulation by tape alone is not permitted.

The use of jumpers may reduce the maximum allowed voltage of the terminal box. Only suitably ‘Ex’ certified jumpers which are listed in the certificate of the respective terminal manufacturer are allowed to be fitted.

Observe special conditions for safe use listed in the manufacturer’s documentation.

Do not punch more than 6 conductors in order to avoid hot spots.

Arrange ground connections for incoming and outgoing cables so that the earth fault current is not carried between separate grounding plates.

When installing terminal components, make sure that these components are listed in the relevant certificates.

Only use suitably certified terminals.

Do not install fuse terminals, relays, miniature circuit breakers, contactors etc. in the enclosure.

Delivery, Transport, Disposal

Disposing of device and packaging must be in compliance with the applicable laws and guidelines of the respective country.

Operation, Maintenance, Repair

Observe IEC/EN 60079-14 during operation.

Observe IEC/EN 60079-17 for maintenance and inspection.

Observe IEC/EN 60079-19 for repair and overhaul.

Before opening the enclosure make sure that the built-in components are de-electrified.

When energized, the enclosure may only be opened for maintenance, if only intrinsically safe circuits are used inside the enclosure.

The required maintenance intervals depend on the respective application, ambient conditions and national regulations and therefore have to be determined by the user.

Labels, windows and other surfaces which are not protected against electric discharge may reduce the maximum allowed voltage of the terminal box.

Insulation by tape alone is not permitted.

The use of jumpers may reduce the maximum allowed voltage of the terminal box. Only suitably ‘Ex’ certified jumpers which are listed in the certificate of the respective terminal manufacturer are allowed to be fitted.

Observe the special conditions for safe use listed in the manufacturer’s documentation.

Do not punch more than 6 conductors in order to avoid hot spots.

Arrange ground connections for incoming and outgoing cables so that the earth fault current is not carried between separate grounding plates.

When installing terminal components, make sure that these components are listed in the relevant certificates.

Only use suitably certified terminals.

Do not install fuse terminals, relays, miniature circuit breakers, contactors etc. in the enclosure.

Rules for installing additional terminals:

It is allowed to add terminals in accordance with the maximum permitted power dissipation. For calculation and terminal capacity tables please refer to below section „Maximum Terminal Capacity.“

Rules for bringing in additional thru-holes for glands:

Determine if the space needed for the additional holes does not affect the stability of the enclosure wall and therefore the effectiveness of the gasket system.

In case of doubts consult Pepperl+Fuchs.

Maintain a minimum distance to the enclosure rims of 5 mm.

Maintain a minimum distance to the enclosure bottom of 18.5 mm.

Observe IEC/EN 60079-14 during operation.

Observe IEC/EN 60079-17 for maintenance and inspection.

Observe IEC/EN 60079-19 for repair and overhaul.

Before opening the enclosure make sure that the built-in components are de-electrified.

When energized, the enclosure may only be opened for maintenance, if only intrinsically safe circuits are used inside the enclosure.

The required maintenance intervals depend on the respective application, ambient conditions and national regulations and therefore have to be determined by the user.

Labels, windows and other surfaces which are not protected against electric discharge may reduce the maximum allowed voltage of the terminal box.

Insulation by tape alone is not permitted.

The use of jumpers may reduce the maximum allowed voltage of the terminal box. Only suitably ‘Ex’ certified jumpers which are listed in the certificate of the respective terminal manufacturer are allowed to be fitted.

Observe the special conditions for safe use listed in the manufacturer’s documentation.

Do not punch more than 6 conductors in order to avoid hot spots.

Arrange ground connections for incoming and outgoing cables so that the earth fault current is not carried between separate grounding plates.

When installing terminal components, make sure that these components are listed in the relevant certificates.

Only use suitably certified terminals.

Do not install fuse terminals, relays, miniature circuit breakers, contactors etc. in the enclosure.

Rules for installing additional terminals:

It is allowed to add terminals in accordance with the maximum permitted power dissipation. For calculation and terminal capacity tables please refer to below section „Maximum Terminal Capacity.“

Rules for bringing in additional thru-holes for glands:

Determine if the space needed for the additional holes does not affect the stability of the enclosure wall and therefore the effectiveness of the gasket system.

In case of doubts consult Pepperl+Fuchs.

Maintain a minimum distance to the enclosure rims of 5 mm.

Maintain a minimum distance to the enclosure bottom of 18.5 mm.

Calculate the minimum distance from the center of the additional thru-hole to the center of an already existing adjacent thru-hole by means of one of the following formulas:

1. Calculation via diameters

   $$\text{HSN} = \text{diameter of adjacent thru-hole}$$

   $$\text{HSA} = \text{diameter of additional thru-hole}$$

   $$\text{Minimum distance between centers} = 1.5 \times (\text{HSN} + \text{HSA})/2$$

2. Calculation via widths across centers

   $$\text{WCN} = \text{width across centers of adjacent cable gland}$$

   $$\text{WCA} = \text{width across centers of additional cable gland}$$

   $$\text{Minimum distance between centers} = 1.2 \times (\text{WCN} + \text{WCA})/2$$

Fabricate the additional thru-holes with an appropriate tooling method.

Ensure the thru-hole diameters are fitting to the gaskets and cable glands to be installed.

Ensure the enclosure surfaces around the thru-holes are undamaged in order to maintain the IP-protection.
Technical Specifications

General
Types and variants GR.T* - see type code table

Electrical specifications
Operating voltage 690 V AC max. Dependent on terminals and equipment fitted, but must not exceed maximum. (GR.TB.10.10.06*: 440V AC max.). See certification label.

Operating current 350 A max. Dependent on terminals and equipment fitted, but must not exceed maximum. (GR.TB.10.10.06*: 35 A max.). See certification label.

Mechanical specifications
Dimensions see datasheet
Enclosure cover fully detachable
Cover fixing, torque see data table
Degree of protection IP66
Mounting see data table
Cable entry thru-holes or cable glands as per specification

Material
Enclosure carbon loaded, antistatic glass fiber reinforced polyester (GRP)
Finish inherent color black
Cover seal foamed silicone
Screws stainless steel combination Phillips and slotted screw
Grounding none as standard optional M6 or M8 internal/external brass-nickel plated grounding bolt optional M6 or M8 internal/external stainless steel grounding bolt
Grounding plate 2 mm brass optional

Ambient conditions
Ambient temperature -40 ... 55 °C -60 ... 65 °C optional below -40 °C with appropriate cable glands

Data for application in connection with hazardous areas
EU-Type Examination Certificate CML 17 ATEX 3255X CML 17 ATEX 3084U
Marking II 2 CD Ex ia IIC T* Gb
Ex ia IIC T* Gb
Ex ia IIC T** Gb
Ex ia IIC T** °C Db
T5/T6° C @ Ta +40 °C
T5/T6° C @ Ta +55 °C
T4/T130°C @ Ta +65 °C
Maximum power dissipation Dependent on enclosure size. See certification label

International approvals
IECEx approval IECEx CML 17.0144X IECEx CML 17.0039U

Conformity
Degree of protection EN 60529
CE marking 0102

Standards
EN 60079-0:2012+A11:2013
EN 60079-7:2015
EN 60079-11:2012
EN 60079-31:2014
IEC 60079-2:2011 Ed. 6
IEC 60079-2-15 Ed. 5
IEC 60079-11:2011 Ed. 6
IEC 60079-31:2013 Ed. 2

Types and variants

<table>
<thead>
<tr>
<th>Enclosure type</th>
<th>Description</th>
<th>Type Code / Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR</td>
<td>glass fiber reinforced polyester (GRP)</td>
<td>GR.TBE.xx.xx.xx.B-Sxxxxxx</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variant-Specific Data</th>
<th>Type Code / Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting screws qty.</td>
<td>Mass [kg]</td>
</tr>
<tr>
<td></td>
<td>Me</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
</tr>
<tr>
<td>GR.TB.10.09.07</td>
<td>2</td>
</tr>
<tr>
<td>GR.TB.13.09.09</td>
<td>2</td>
</tr>
<tr>
<td>GR.TB.16.09.09</td>
<td>2</td>
</tr>
<tr>
<td>GR.TBE.18.10.09</td>
<td>2</td>
</tr>
<tr>
<td>GR.TBE.18.20.09</td>
<td>2</td>
</tr>
<tr>
<td>GR.TBE.18.30.09</td>
<td>4</td>
</tr>
<tr>
<td>GR.TBE.18.30.10</td>
<td>4</td>
</tr>
<tr>
<td>GR.TBE.36.10.09</td>
<td>4</td>
</tr>
<tr>
<td>GR.TBE.36.10.17</td>
<td>4</td>
</tr>
<tr>
<td>GR.TBE.36.20.17</td>
<td>4</td>
</tr>
<tr>
<td>GR.TBE.36.20.24</td>
<td>6</td>
</tr>
<tr>
<td>GR.TBE.36.24.24</td>
<td>6</td>
</tr>
<tr>
<td>GR.TBE.48.30.24</td>
<td>8</td>
</tr>
</tbody>
</table>

Mass is valid for empty enclosure, it will increase according to integrated components and cable glands
### Maximum Terminal Capacity

Maximum number of terminals in relation to the cross-section and the permissible continuous current, based on terminal type WDU. GR.T*.10.10.07 and GR.T*.13.13.09 based on terminal type AKZ.

**Calculation of terminals quantities:**

\[ \sum_{k=0}^{n} \frac{\text{installed terminals quantity}}{\text{permitted terminals quantity}} < 1 \]

**Example:**

1. enclosure type GR.T*.36.36.10

   - 10 x 6 mm\(^2\) terminals with an application current of 24 A consume 40% of the rated power dissipation (104 W) of the terminals.

2. installation of additional 5 terminals with 2.5 mm\(^2\) and an application current of 10 A will consume 6% of the rated power dissipation (6.7 W).

3. result: installation of the additional terminals is permissible

### Table of Terminal Capacities and Permitted Power Dissipation

<table>
<thead>
<tr>
<th>Terminal Capacity (mm(^2))</th>
<th>Permitted Number of Terminals Based on Terminal Capacity and Application Current:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current (A)</td>
<td>Terminal Capacity (mm(^2))</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>2.5</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>35</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>63</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table of Permitted Power Dissipation

<table>
<thead>
<tr>
<th>Maximum Permitted Power Dissipation (W)</th>
<th>Permitted Number of Terminals Based on Terminal Capacity and Application Current:</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Maximum Permitted Power Dissipation (W): 11</td>
</tr>
<tr>
<td>27</td>
<td>Maximum Permitted Power Dissipation (W): 27</td>
</tr>
<tr>
<td>33</td>
<td>Maximum Permitted Power Dissipation (W): 33</td>
</tr>
<tr>
<td>44</td>
<td>Maximum Permitted Power Dissipation (W): 44</td>
</tr>
</tbody>
</table>

### Table of Application Currents

<table>
<thead>
<tr>
<th>Current (A)</th>
<th>1.5</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>13</td>
<td>13</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>35</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>63</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Example Calculation

1. enclosure type GR.T*.36.36.10

   - Maximum permitted power dissipation: 44 W

2. Maximum permitted power dissipation: 3.2 W

3. 45% + 25% + 6% = 76% < 100% result: installation of the additional terminals is permissible

### Additional Calculations

- Installation of additional 5 terminals with 2.5 mm\(^2\) and an application current of 10 A will consume 6% of the rated power dissipation (6.7 W).

- Result: installation of the additional terminals is permissible