IP PROTECTION CLASSES

Our standard enclosures have been tested under standardised conditions (as a unique VDE object and/or according to IEC 529) for protection against contact as well as against the ingress of foreign bodies and water. The IP protection classes specified for OKW enclosures refer to the goods in stock without any machining or accessories fitted. We cannot assume any guarantee for compliance with these protection classes in the subsequent customer application areas, as these are not known to us and depend on a large number of variables, such as use outdoors with constant changes in ambient conditions. In addition, the IP standard test conditions do not take into account the ageing processes in the products and the extent of subsequent modifications to the products themselves. We therefore recommend that you certify your finished products in order to be absolutely certain.

The protection classes are indicated by a code with the letters IP and the two following codes for the respective protection class. Here are some examples:

What does IP54 mean? If the standard enclosure has protection class IP54, it has complete protection against accidental contact, whereby dust can penetrate in small quantities. In addition, it is protected against harmful quantities of splash water from all sides.

The high protection class IP65 means that dust cannot penetrate into the standard enclosure under standard conditions. The electronics are protected against harmful quantities of water jets from any direction, and complete protection against accidental contact is guaranteed.

PROTECTION AGAINST MECHANICAL IMPACT

The impact strength mark is a measure of the resistance of an enclosure to mechanical impacts. It is standardised according to the international DIN EN 50102 standard, and describes how much impact energy the standard enclosure must at least withstand. The test classes for impact strength are composed of the code letters IK and a reference number for the impact force. Example: IK08 means that the enclosure has successfully passed a standard test with impact energy of 5 joules.

The following pages show the minimum protection classes achieved by standard OKW enclosures, explanations of the individual degrees of protection in accordance with IP and NEMA, as well as of impact strength.
PROTECTION CLASSES OF OKW ENCLOSURES

According to DIN EN 50102/A1

$< \text{IP 40}$

- EURO CASE
- HAND-HELD-BOX
- POTTING BOX
- DIN MODULAR CASE TYPE A
- DESK CASE
- RALTEC B
- RALTEC C
- SHELL-TYPE CASE V0 G without sealing
- PLUS CASE

- SMART-CASE without sealing
- ART-CASE
- COMITEC
- CONNECT
- DATEC
- ERGO-CASE L with display trim
- EVOTEC without sealing
- FLAT-PACK CASE N, H and A with front panel
- MINI-DATA-BOX without sealing
- MEDITEC
- MOTEC with front and rear panel / sloping control panel and rear

$\text{IP 40}$

- SMART-CASE without sealing
- SMART-PANEL
- SOFT-CASE without intermediate ring / with intermediate ring in ABS
- SYNERGY
- TOPTEC
- UNITEC
- ERGO-CASE XS

$\text{IP 41}$

- DATEC-COMPACT without sealing
- DATEC-POCKET-BOX without sealing
- MINITEC DROP S and M with intermediate ring in TPE
- MINITEC EDGE M with intermediate ring in TPE
- SENSOCASE
- ERGO-CASE with intermediate ring in TPE

$\text{IP 42}$

- MINI-DATA-BOX
- DATEC-CONTROL M & L with sealing kit
- DATEC-POCKET-BOX S, M and L with sealing
- INTERFACE-TERMINAL with sealings
- SMART-TERMINAL with plastic side covers
- SOFT-CASE with intermediate ring in TPE, without battery comp.

$\text{IP 54}$

- BLOB with sealing
- CARRYTEC enclosure with sealing
- DATEC-CONTROL M & L with sealing kit
- DATEC-POCKET-BOX S, M and L with sealing
- DATEC-Terminal with sealing
- INTERFACE-TERMINAL with sealings
- SMART-TERMINAL with plastic side covers
- SOFT-CASE with intermediate ring in TPE, without battery comp.
- HAND-TERMINAL with sealing kit (case, front panel)

$\text{IP 55}$

- SMART-CASE
- SMART-CASE
- SMART-TERMINAL with plastic side covers
- EASYTEC with sealing
- EVOTEC with sealing
- HAND-TERMINAL with sealing kit (case, front panel)

$\text{IP 65}$

- MINI-DATA-BOX with sealing
- NET-BOX with sealing kit
- PROTEC
- SHELL-TYPE CASE G with sealing without battery compartment
- SMART-CASE L & XL with sealing (with 170)
- SNAPTEC with sealing
- STYLE-CASE with sealing kit
- SLIM-CASE with sealing

$\text{IP 66}$

- IN-BOX
- ROBUST-BOX with sealing
- SMART-CASE with sealing (with 90/110/130/150)
- SOLID-BOX with sealing

The IP protection classes specified for OKW enclosures refer to the goods in stock without any machining or accessories fitted.

According to DIN VDE 0470 TEIL 1 / EN 60529 / IEC 529

Subject to technical modification without notice. Typographical and other errors do not justify any claim for damages. Stand: 04/23en. Copyright © 2022 OKW Gehäusesysteme
### PROTECTION CLASSIFICATIONS

#### DEFINITION OF INDEXES

<table>
<thead>
<tr>
<th>First index digit</th>
<th>Protection</th>
<th>Extent of protection</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no protection</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>against large foreign bodies</td>
<td>Protection of persons from accidental large-area direct contact with active or internal moving parts (e.g. hand contact), but no guard against intentional access to such parts. Protection of the object from access of solid foreign matter larger than 50 mm in diameter.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>against medium-size foreign bodies</td>
<td>Protection of persons from finger contact with active or internal moving parts. Protection of the object from access of solid foreign matter larger than 12 mm in diameter.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>against small foreign bodies</td>
<td>Protection of persons from touching active or internal moving parts with tools, wires or similar foreign bodies thicker than ø 2.5 mm. Protection of the object from access of solid foreign matter larger than 2.5 mm in diameter.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>against granular foreign bodies</td>
<td>Protection of persons from touching active or internal moving parts with tools, wires or similar foreign matter &gt; than ø 1.0 mm.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>from deposit dust</td>
<td>Total protection of persons from touching voltage-carrying or internal moving parts. Protection of the object from harmful deposit of dust. Access of dust is not completely prevented, but dust is prevented from access in a quantity impairing the functioning.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>from access of dust</td>
<td>Total protection of persons from touching voltage-carrying or internal moving parts. Protection of the object from access of dust.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>in dipped state</td>
<td>If the object is dipped into water (0.15-1 m) under the defined conditions of pressure and time, water must not enter it in any harmful quantity.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>in submerged state</td>
<td>If the object is submerged in water under defined extremely conditions, water must not enter in any harmful quantity.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second index digit</th>
<th>Protection</th>
<th>Extent of protection</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no protection</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>against water dripping vertically</td>
<td>Water drops falling vertically must not have any harmful effect.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>against water dripping up to 15°</td>
<td>Water drops falling vertically at any angle up to 15° must not have any harmful effect.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>against spray water</td>
<td>Water hitting the object at any angle up to 60° with the vertical must not have any harmful effect.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>against splash water</td>
<td>Water splashing against the object from all directions must not have any harmful effect.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>against jet water</td>
<td>A jet of water nozzled against the object from all directions must not have any harmful effect.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>against strong jet water</td>
<td>A strong jet of water nozzled against the object from all directions must not have any harmful effect.</td>
<td></td>
</tr>
</tbody>
</table>

**ACCORDING TO DIN EN 50102/A1**

**ACCORDING TO DIN VDE 0470 TEIL 1 / EN 60529 / IEC 529**
### PROTECTION AGAINST MECHANICAL IMPACT

<table>
<thead>
<tr>
<th>IK-class</th>
<th>protection</th>
<th>Protection Classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>IK 00</td>
<td>no protection</td>
<td>Impact energy &lt; 1 joule</td>
</tr>
<tr>
<td>IK 01 - IK 05</td>
<td>impact energy &lt; 1 joule</td>
<td>0.2 kg</td>
</tr>
<tr>
<td>IK 06</td>
<td>impact energy 1 joule</td>
<td>0.5 kg</td>
</tr>
<tr>
<td>IK 07</td>
<td>impact energy 2 joule</td>
<td>0.5 kg</td>
</tr>
<tr>
<td>IK 08</td>
<td>impact energy 5 joule</td>
<td>1.7 kg</td>
</tr>
<tr>
<td>IK 09</td>
<td>impact energy 10 joule</td>
<td>5 kg</td>
</tr>
<tr>
<td>IK 10</td>
<td>impact energy 20 joule</td>
<td>5 kg</td>
</tr>
</tbody>
</table>

### DEFINITION OF INDEXES

- **IK**-class protection
- **local** protection
- **slim-cases**
- **with** intermediate ring
- **in TPE**

### NEMA (STANDARD 250) ENCLOSURE PROTECTION CLASSIFICATIONS

<table>
<thead>
<tr>
<th>NEMA-CODE</th>
<th>AREA</th>
<th>PROTECTION</th>
<th>COMPARABLE IP-CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Indoor</td>
<td>Falling dirt</td>
<td>IP 10</td>
</tr>
<tr>
<td>2</td>
<td>Indoor</td>
<td>Dirt and dripping water</td>
<td>IP 11</td>
</tr>
<tr>
<td>3</td>
<td>Outdoor</td>
<td>Windblown dust, rain and sleet; against damage from external formation of ice</td>
<td>IP 54</td>
</tr>
<tr>
<td>3R</td>
<td>Outdoor</td>
<td>Rain and sleet; against damage from external formation of ice</td>
<td>IP 14</td>
</tr>
<tr>
<td>3S</td>
<td>Outdoor</td>
<td>Windblown dust, rain and sleet; external mechanisms remain operable when ice laden</td>
<td>IP 54</td>
</tr>
<tr>
<td>5</td>
<td>Indoor</td>
<td>Dust, falling dirt, dripping non-corrosive liquids</td>
<td>IP 52</td>
</tr>
<tr>
<td>6</td>
<td>Indoor/Outdoor</td>
<td>Hose-directed water, temporary submersion at a certain depth</td>
<td>IP 67</td>
</tr>
<tr>
<td>6P</td>
<td>Indoor/Outdoor</td>
<td>Hose-directed water, temporary submersion at a certain depth; against damage from external</td>
<td></td>
</tr>
<tr>
<td>12, 12K</td>
<td>Indoor</td>
<td>Circulating dust, falling dirt, non-corrosive coolants</td>
<td>IP 52</td>
</tr>
<tr>
<td>13</td>
<td>Indoor</td>
<td>Dust, splash water, oil, non-corrosive liquids</td>
<td>IP 54</td>
</tr>
</tbody>
</table>

**Notice:** The Nema-Codes are only approximately comparable with the IP-Codes.