**INDUSTRIAL PLUGS AND SOCKETS**

**REFERENCE STANDARDS**

EN 60309-1: Plugs, socket-outlets and couplers for industrial purposes. Part 1: general requirements.

EN 60309-2: Plugs, socket-outlets and couplers for industrial purposes. Part 2: dimensional interchangeability requirements for pin and contact-tube accessories.

**QUALITY MARKS**

**TECHNICAL CHARACTERISTICS**

- Rated current: 16A-32A-63A-125A
- Rated voltage: 100÷690V~
- Frequency: d.c. - 50÷500Hz
- Insulating voltage: 500/690V~
- Protection degree: IP44/IP54 - IP66/IP67/IP69
- Operating ambient temperature according to the reference standard: -25°C +40°C
- Max operating ambient temperature: 60°C
- Glow Wire test: 650°C/850°C
- Material: Engineering plastic
- IK degree at 20°C: IK08
- Cable inlets: Cable gland
- Halogen free: Yes

**VERSIONS**

- Plugs
- Connectors
- Appliance inlets
- Flush mounting socket outlets
- Surface mounting socket outlets

**BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS**

<table>
<thead>
<tr>
<th>Saline solution</th>
<th>Acids</th>
<th>Bases</th>
<th>Solvents</th>
<th>Mineral oil</th>
<th>UV rays</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concentrated</td>
<td>Diluted</td>
<td>Concentrated</td>
<td>Diluted</td>
<td>Hexane</td>
</tr>
<tr>
<td>Resistant</td>
<td>Limited Resistance</td>
<td>Resistant</td>
<td>Resistant</td>
<td>Resistant</td>
<td>Not Resistant</td>
</tr>
</tbody>
</table>

- Saline solution
- Acids: Resistant Limited Resistance Limited Resistance Not Resistant
- Bases: Resistant Limited Resistance Limited Resistance Not Resistant

**WIRING AND INSTALLATION**

**APPLICATION EXAMPLES**

- Nickel-plated brass pins to guarantee long-lasting efficiency of the electrical contact.
On the 16A and 32A “Snap-on” device with stainless steel spring to guarantee frequent opening/closing (possibility to inspect the terminals).

External cable stay with tulip clamping having IP66/IP67/IP69 cable gland functions (the device is used on both IP44/IP54 and IP66/IP67/IP69 products).

The materials of the pin and contact tube have different surface hardness so as to eliminate, during insertion and extraction operations, the layer of oxide that forms on the surface, thus improving contact smoothness and resistance while keeping them unchanged over time.

16A plugs and connectors with insulation perforating terminals which allow wiring without stripping the conductor.

Insulation piercing terminal made in highly elastic phosphor bronze.

The reduction in plug-socket insertion and extraction forces was obtained thanks to the study of a new compression spring of the socket contact. As illustrated in this graph, the reduction in the force was an average of 30% compared to the previous versions, in any event guaranteeing low contact resistance.

16-32A plugs, flush mounting sockets and surface mounting sockets with spring terminals.

63A plugs and connectors with screwless spring terminal. Requires cable stripping, but not the tightening of the screws.

16-32A plugs, flush mounting sockets and surface mounting sockets with spring terminals.

Internal profile of the handles which avoids the accidental opening of the contact.


All gaskets are moulded directly on the cover and at the coupling point with the grip. Grip closing is by means of metric screws and metal inserts, making tightening easier and allowing for unlimited inspections and closings.

Contact holder in special technopolymer with fibreglass, featuring high heat resistance. Pilot contacts available as standard equipment on both plugs and sockets.

Entirely made with halogen-free materials, with excellent mechanical resistance to impacts, chemical substances and UV rays.

The axial incisions and the new compression spring of the socket contact with elasticity coefficient such as to keep insertion and extraction forces constant.

The nickel-plating of the socket contact combined with the special drawing and polishing process increase smoothness and ensure a higher number of contact points.

Thanks to their characteristic geometry, the new mantle terminals are suited to all types of conductors and terminals. They increase cable accessibility and contact surface, thus allowing higher tightening torques to benefit contact resistance and seal.

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THE "SAFE-IN" SAFETY DEVICE

The “SAFE-IN” safety device assembled on the 16A industrial sockets is the most innovative element of the new OPTIMA Series. The “SAFE-IN” device works like the protection installed on household sockets, i.e., by means of an appropriate shutter, it closes the input of the socket contact tubes and prevents accidental and voluntary contact of live parts of the socket with slim objects, such as screwdrivers or wires. This protection offers an additional safety guarantee, in addition to that already provided by the spring-loaded cover assembled on the mobile sockets.

SAFETY LEVEL OF THE OPTIMA SERIES SOCKETS

The OPTIMA Series sockets with the “SAFE-IN” safety device guarantee a higher level of safety in comparison with ordinary industrial sockets, especially in environments where there may be children present or people who have not been trained about electrical dangers (public areas, amusement parks, campgrounds, open markets, etc.). Dangerous situations, such as the important examples illustrated in the figure to the side, can be resolved thanks to the new OPTIMA Series sockets equipped with the “SAFE-IN” safety device.

APPLICATION EXAMPLES

The importance of this protection is shown in the figure to the side.

CONNECTOR TUBE PROTECTIVE SHUTTER FOR GREATER SAFETY AGAINST DIRECT CONTACTS. (THE SAFE-IN SAFETY DEVICE).