Position detection with system
The new compact position switches PS116

For many years the privately owned Schmersal Group has been developing and manufacturing products to enhance occupational safety. What started out with the development and manufacture of a very wide variety of mechanical and non-contact switchgear has now become the world’s largest range of safety systems and solutions for the protection of man and machine. Over 1,500 employees in more than 50 countries around the world are developing safety technology solutions in close cooperation with our customers, thus contributing to a safer world.

Motivated by the vision of a safe working environment, the Schmersal Group’s engineers are constantly working on the development of new devices and systems for every imaginable application and requirement of the different industries. New safety concepts require new solutions and it is necessary to integrate new detection principles and to discover new paths for the transmission and evaluation of the information provided by these principles. Furthermore, the set of ever more complex standards, regulations and directives relating to machinery safety also requires a change in thinking from the manufacturers and users of machines.

These are the challenges which the Schmersal Group, in partnership with machinery manufacturers, is tackling and will continue to tackle in the future.

For information, call 800-221-0487  Switches Unlimited  Fax 718-672-6370  www.switchesunlimited.com  tech@switchesunlimited.com  sales@switchesunlimited.com

Safe solutions for your industry
Position switches PS116

The compact

The benefits of the new position switch at a glance:

- Minimal space required due to compact-design
- Reduced assembly time due to pre-assembled position switches
- Symmetric casing for different installation situations
- Adaptable to any application
- Quick and easy alteration of the actuators in 45° steps
Protection class IP66 / IP67 - safe operation under rough ambient conditions.

Large variety of actuation and switching elements

Switching elements with 3 contacts ensures a redundant switch-off with additional signaling contact

Suitable for the elevator industry (EN 81-1)

Latching function for saving the switching state
PS116 - Compact and versatile

They are extremely compact, very robust and extremely versatile. With these properties, the new position switches PS116, are aimed at a wide variety of applications across all disciplines of mechanical engineering and plant manufacturing.

The benefits of the new range of position switches at a glance:

- Reliable position detection
- Compact high-quality design
- Highly versatile
- Robust and reliable
- Easy to use

Application usage

Type 1 position switches according to ISO 14119 are for determining the position and monitoring of movable components on machines and for protective equipment that can be moved laterally or is rotatable. This allows them to be used in all industrial environments.

The protection classes IP66 an IP67 form the requirements for the use of position switches in adverse ambient conditions.

All position switches have positively opening NC contacts according to IEC 60947-5-1. In conjunction with an appropriate safety analysis, a single position switch can be used up to PL d. Using two position switches PL e can be achieved according to ISO 13849-1.

Elevator industry

As all available switching elements have a contact opening of 2 x 2 mm, the new range also fulfills the requirements according to EN 81-1 when it comes to usage in elevator technology.
Flexible solutions

Connection designs
The PS116 range of position switches are already wired and have either a 2m long connection cable or a connector plug M12 (4 / 6 pin).

Switching elements with up to 3 contacts
Switching elements with 3 contacts ensure a redundant switch-off with additional signalling contact. All switching elements of the diverse contact combinations are equipped with galvanically separated contacts with positive break NC contacts.

Latching function
To save the switching state, versions are available with snap action and an optional latching function where the mounting element must be manually reset to the starting condition.

Symmetrical casing
As a result of the symmetrical construction of the casing the same switch can be used for the right and left sides. This is the case for the cable and connector design.
SCHMERSAL-Position Switch PS116 - Compact and versatile for a wide range of applications

Can be combined with different actuators

S200
Plunger

R200
Roller plunger
Plastic roller Ø 9.5 mm

K200
Offset roller lever
Plastic roller Ø 12 mm

K240
Angle roller lever
Plastic roller Ø 22 mm

K250
Angle roller lever
Plastic roller Ø 22 mm

H200
Roller lever
Plastic roller Ø 16 mm
Lever length: 24 mm

L200
Lower connection cable
Cable length 2 m

LR200
Right connection cable
Cable length 2 m

ST
Connector plug bottom
M12, 4 / 6 pole

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SCHMERSAL-Position Switch PS116 - Compact and versatile for a wide range of applications

Other versions upon request

K210
Offset roller lever
Plastic roller Ø 14 mm

K230
Angle roller lever
Plastic roller Ø 14 mm

N200
Roller lever
Adjustable in 2 mm steps
Plastic roller Ø 20 mm

J200
Rod lever
Plastic rod Ø 6 mm, length 200 mm
Only suitable for positioning tasks!

Can be combined with different switching elements

<table>
<thead>
<tr>
<th></th>
<th>Snap action</th>
<th>Slow action</th>
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<tr>
<td>2 contacts</td>
<td></td>
<td></td>
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<tr>
<td>3 contacts</td>
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<td>Latching function</td>
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<td>Overlapping contacts</td>
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<td>Staggered contacts</td>
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STR
Right connector plug
M12, 4 / 6 pole

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Actuator elements and lever

Adjustable actuator elements
All actuator elements can be rotated in 45° steps and can be quickly replaced and implemented due to the simple mounting design.

Adjustable lever
Roller lever can be set in 15° steps.

Rotatable lever
For versions with a rotatable roller lever, the lever can be fitted so that the roller is on the inside.
## Technical data

<table>
<thead>
<tr>
<th>Features</th>
<th>PS116</th>
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<tbody>
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<td><strong>Key Features</strong></td>
<td>■ Compact design</td>
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<tr>
<td></td>
<td>■ Symmetrical casing</td>
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<tr>
<td></td>
<td>■ Actuator heads can be repositioned by 8 x 45°</td>
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<td></td>
<td>■ Many switching elements with up to 3 contacts</td>
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<tr>
<td></td>
<td>■ Connecting cable or connector plug M12</td>
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<tr>
<td><strong>Electrical characteristics</strong></td>
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<tr>
<td>Max. switching capacity U/I</td>
<td>AC-15: 240 VAC / 3 A;</td>
</tr>
<tr>
<td></td>
<td>DC-13: 24 VDC / 1.5 A</td>
</tr>
<tr>
<td>Switching principle</td>
<td>Snap- or slow action</td>
</tr>
<tr>
<td><strong>Mechanical data</strong></td>
<td></td>
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<tr>
<td>Cable section</td>
<td>4 x 0.5 mm²; 6 x 0.5 mm²</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>31 x 57 x 16 mm</td>
</tr>
<tr>
<td>Housing material</td>
<td>Glass-fibre reinforced thermoplastic, chromated zinc die-cast</td>
</tr>
<tr>
<td>Design</td>
<td>EN 50047</td>
</tr>
<tr>
<td><strong>Ambient conditions</strong></td>
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<tr>
<td>Ambient temperature</td>
<td>-30°C…+80°C</td>
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<tr>
<td>Protection class</td>
<td>IP66, IP67</td>
</tr>
<tr>
<td><strong>Safety classification</strong></td>
<td></td>
</tr>
<tr>
<td>B_{10d} (NC contact)</td>
<td>20,000,000</td>
</tr>
<tr>
<td>B_{10d} (NO contact)</td>
<td>1,000,000</td>
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<tr>
<td><strong>Certificates</strong></td>
<td>[UL, CCC]</td>
</tr>
</tbody>
</table>

MTTF_D = \frac{B_{10d}}{0.1 \times \eta_{op}} \quad \eta_{op} = \frac{d_{op} \times h_{op} \times 3600 \text{ s/h}}{I_{cycle}}

\(^1\) Note: at 10% ohmic contact load