

# Tough but elegant

Examples of use for SCHURTER Metal Line buttons and switches

**Switches for harsh outdoor applications are exposed to the most extreme influences: Vandalism, weather, fluctuations in temperature, fine dust and more. With Metal Line, SCHURTER proves that robustness, functionality and absolute reliability are entirely compatible with aesthetics and elegance.**



**Metal Line switch with a completely backlit actuating surface made of robust ceramic, which can be labeled using laser technology to suit the individual customer requirements**

After all, switches are meant to be touched. They are constantly pressed. And our fingers are highly sensitive sensors. We immediately sense the surface texture of a switch. Cheap or high quality? We decipher this in an instant. Furthermore, the demands placed on designers and manufacturers of input systems for a high level of aesthetics are rapidly increasing. What is SCHURTER's response to these demands? The Metal Line.

## Metal Line

The Metal Line from SCHURTER includes a variety of switches using various technologies designed specifically to protect against destructive damage and for use in extreme environments. Metal Line switches are extremely resistant. They meet the mechanical shock requirements up to IK07 according to DIN EN 50102. The switches are designed for a lifetime of up to 20 million activations. They are used in input systems in harsh industrial environments as well as in applications with high user interface. High-quality metal housing is a feature shared by all Metal Line switches. This not only makes them extremely robust and durable, but also ensures they can withstand tactically and visually demanding applications.

## Stroke or piezo

The Metal Line consists of buttons and switches designed with classic stroke technology (short and medium stroke) or piezo impulse

activation. The components of the Metal Line are specified according to IP protection classes. The piezo buttons and switches of the completely sealed PSE series meet at least one protection class from IP67, which corresponds to temporary submergence. The push-buttons in the MSM series are designed with different protection classes between IP40 and IP67. There is also a distinction between the IP protection of the mechanical level and the electrical contact level in this series. For example, the electrical contact level can be designed in protection class IP67, while the mechanical level corresponds to protection class IP40.

## Feedback

A button is designed to give its user a clear confirmation of whether the system has detected their input. This feedback can be communicated acoustically, tactically, visually or by the release of the function selected on the device. A visual feedback is possible with the illumination of a single light integrated in the button, multicolor light variations or by means of the corresponding indicator on the display. Functions that are seldom used on the input system - such as a Help function - should be triggered by buttons with pronounced tactility, since our fingers will recognize this feedback the fastest.

## Lighting and lettering

Clear feedback, visibility and quick detectability of the function form the basic requirements

for a button. The initial variants of the SCHURTER Metal Line switches were designed for installation diameters of 16 to 22 mm. In order to provide the user with the possibility of visual feedback, these variants were extended to incorporate spot and ring lighting. For the special requirements of creating a button within the series for the visually impaired, the PSE 22 model was designed with the option of integrating Braille lettering.

The possible adaptations to fulfill specific customer requirements are almost unlimited in the Metal Line. For example, there are the brand new metal buttons with a completely backlit actuating surface, which can be labeled using laser technology to suit the individual customer requirements. The special feature of this new development is the extremely robust ceramic surface of the backlit actuation surface.

## Outdoor: Problems

The use of input systems outdoors involves a lot of challenges and problems. In order to select the right components to be used, all the influencing factors in the environment of the respective input system must be taken into account. The location, climatic requirements and the function to be triggered are all essential factors in this process. In most cases, where appliances are exposed in the open without any form of protection, calculations must take into account sub-zero temperatures and there-

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fore also snow and ice. Under such conditions, switches with stroke can temporarily malfunction. Water can penetrate into the gap between the moving parts. If the temperature falls below zero, this freezes, and the actuator can no longer be pressed down to make full contact. Pollution, dust, exhaust gases or even spilled liquids are other factors that can make life difficult for an input system.

Input systems set up outdoors are often more exposed to deliberate vandalism and improper handling. It is essential that they feature high impact resistance and/or a high level of impermeability. It is exactly for all these reasons that the Metal Line offers the right switch for every conceivable application.



**Unambiguous feedback, visibility and a quick perceptibility of the function are basic requirements for any switch**

#### In practice: Outdoor ticket sales

Ticket machines for public transport are almost exclusively located outdoors and are exposed to the effects of the wind and weather. The extreme fluctuations in temperature and humidity levels place exacting demands on the reliability of an input system. When the temperature drops below zero, there is the risk of switches with stroke icing over, thereby blocking them. These situations are elegantly avoided with a piezo-actuated system of the SCHURTER PSE series. The completely sealed metal housing does not contain any moving parts, which makes it impervious to exhaust gases and dust particles from the streets that usually run next to them.

The high degree of IP protection (IP67) as well as a particularly high impact resistance (IK value) also protect these kind of input systems against deliberate vandalism and improper handling - e.g. spilled drinks.

The PSE switches are made from high-quality stainless steel or anodized aluminum and are finished with particularly flat surface at the front of the device. This leaves minimal contact area for vandalism. The interior of the device is protected against moisture with an O-ring placed between the switch housing and the front of the device.

#### In practice: Parking cash points, petrol stations

Pay machines in car parks or petrol stations usually have to work in far less harsh conditions. In these areas it is elements other than the weather or dust protection that are of greater importance. Huge numbers of people use these electronic payment systems every day. These transactions have to be completed quickly - even in the dark. Consequently, these input systems must be designed in such a way that the user can intuitively enter their data quickly and correctly. The buttons have to be big enough, easily recognizable and - in case of poor light conditions - illuminated. Furthermore, the user must receive clear feedback from the button that their input has been detected. Buttons with a high degree of tactility are clearly advantageous in these cases. An ideal application for the SCHURTER MSM series. The high-quality materials used for the housings and actuators are designed for maximum reliability, robustness and durability. The buttons are available in all sizes and can be illuminated and marked according to the customer's requirements.

#### Summary

The particularly distinctive variety of the SCHURTER Metal Line makes it easy for designers and manufacturers to choose the right model for their specific technical and design requirements. Different installation dimensions, switch types, installation methods, housing materials and lighting colors form a creative basis to facilitate every design wish.

The Metal Line is tough. Thanks to its high protection class (splash-proof IP67 with the PSE series), it is particularly suitable for applications in the harshest environments. Wind and weather, ice and snow - you can always rely on it to do its job. The Metal Line is also largely unaffected by malicious vandal acts. Thanks to its particularly flat design and impressive impact resistance, there is very little contact surface for any acts of vandalism. SCHURTER also pays special attention to the feedback the buttons and switches give to their users. When a device has correctly received an input, it immediately reports back acoustically, tactilely, visually or with an input display. This is particularly important with sensitive and safety-based input systems, such as payment terminals.

The Metal Line buttons in the PSE and MSM series can also be specifically adapted to the customer's wishes, such as lettering, lighting or housing materials (e.g. plastic) - insofar as you have not found such options, contrary to expectations, in the already hugely extensive range.

Last but not least, the elegant design and excellent surface processing guarantee maximum strength and durability with the proverbial reliability of SCHURTER components.



**Ticket machines are often placed outdoors and are subject to high temperature fluctuations, humidity and exhaust gases. Source: ZVV**

#### Company

SCHURTER continues to be a progressive innovator and manufacturer of electronic and electrical components worldwide. Our products ensure safe and clean supply of power, while making equipment easy to use. We offer a broad range of standard products including circuit protection, connectors, EMC products, switches and input systems, as well as electronic manufacturing services. Moreover, SCHURTER is ready to work with our customers to meet their application specific requirements, not covered in our standard range. You can rely on SCHURTER's global network of companies and partners to guarantee a high level of local service and product delivery.

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