## TABLE OF CONTENTS

SIGNAL LUX

# Push button and <br> Rocker Switches 

| SERIES | 14 | L4 Bowl | $L 4$ Rubber Body |
| :---: | :---: | :---: | :---: |
| Suitable for class II appliances $>3 \mathrm{~mm}$ contact gap. |  |  |  |
| Version | Push button switch 1 and 2 pole |  |  |
| Switch Rating EN 61058-1 | 16 (4) A 250V~ 1 E4 T 125 10 (6) A 250V~ 5E4 T 125 |  |  |
| UL 1054 | 16 A 125/250VAC T 100 3/4 HP 125/250VAC T 100 |  |  |
| Special version: EN 61058-1 | 12 (8) A 250V~554 T 85 |  |  |
| Max. working temperature EN (UL) | $125^{\circ} \mathrm{C}\left(100^{\circ} \mathrm{C}\right)$ |  |  |
| Switch Function | ON/OFF, momentary NO illuminated or non-illuminated 1 pole NO + 1 pole NC |  |  |
| Water/Dust protection | IP 40 (IP 64 with PVC cover) | IP 40 | IP 65 |
| Electrical connection | I. $\begin{aligned} & 6.3 \times 0.8 \mathrm{~mm} \\ & 4.8 \times 0.8 \mathrm{~mm}\end{aligned}$ (available horizontal and down vertical) <br> Solder pins for pcb mounting |  |  |
| Panel thickness | 0.5 to 3.0 mm0.5 to 2.2 mm with PVC and Rubber Body |  |  |
| Features |  |  | Oval <br> Rectangular |
| Panel cut-out | $19 \times 13 \mathrm{~mm}$ |  |  |
| Drawing |  |  |  |
| Approvals |  |  |  |

L5

| 81 | 82 | 83 |
| :---: | :---: | :---: |
|  |  |  |
| Rocker switch 1 pole | Rocker switch 1 and 2 pole | Rocker switch $2 \times 1$ pole |
| 20 (2) A $250 V \sim$ 1E4 T 125 <br> 16 (8) A 250V~ 1E4 T 125  <br> 10 (6) A 250V~ 5E4 T 125  <br> 10 (4) A 400V~ 1E4 T 125 |  |  |
| 20 A 125 V AC T 105 <br> 16 A 250 VAC T 105 <br> $3 / 4 \mathrm{HP}$ $125 / 250 \mathrm{~V}$ AC T 105 |  |  |
| 12 (10) A 250V~ 5 E4 (T 85) |  |  |

## $125^{\circ} \mathrm{C}\left(105^{\circ} \mathrm{C}\right)$

ON/OFF, change over, change over center off. - NO, NC, change over momentary illuminated and non-illuminated. - Only for 82 Series: 1 pole versions with semi-independent lamp, center off momentary on one side. Only for 83 Series: 1 switch +1 signal lamp

IP 40 (PVC cover available)


| D1 | A4 | A3 |
| :---: | :---: | :---: |
|  |  |  |
| Frameless rocker switch 1 pole | Push button switch 1 and 2 pole | Push button switch 1 pole |
| $\begin{aligned} & 16 \text { (4) A 250V~ 1E4 T } 125 \\ & 10 \text { (8) A 250V~5E4 T } 125 \end{aligned}$ | 16 (8) A 250V~ 1E4 T 125 16 (6) A 250V~ 5E4 T 125 10 (4) A 400V~ 1E4 T 125 | 16 (6) A 250V~1E4 10 (4) A 250V~ 5E4 10 (4) A 400V~ 1E4 |
| 16 A 125/250VAC T 105 1HP 125/250VAC T 105 | 16 A 125/250VAC T 105 3/4HP 125/250VAC T 105 | 16 A 125/250VAC T 105 3/4HP 125/250VAC T 105 |
| - | $\begin{gathered} 12 \text { (10) A 250V~5E4 } \\ \text { T } 85 \end{gathered}$ | - |
| T $125^{\circ} \mathrm{C}\left(105^{\circ} \mathrm{C}\right)$ | T $125^{\circ} \mathrm{C}\left(105^{\circ} \mathrm{C}\right)$ | T $125^{\circ} \mathrm{C}\left(105^{\circ} \mathrm{C}\right)$ |
| ON/OFF <br> illuminated or not illuminated latched or momentary | ON/OFF, momentary NO change over illuminated and non illuminated | ON/OFF change over non illuminated |
| IP 40 | IP 54 (IP 55) | IP 54 |
| [. $\begin{aligned} & 6.3 \times 0.8 \mathrm{~mm} \\ & 4.8 \times 0.8 \mathrm{~mm}\end{aligned}$ | $6.3 \times 0.8 \mathrm{~mm}$ $4.8 \times 0.8 \mathrm{~mm}$ <br> Screw terminals | [. $\begin{aligned} & 6.3 \times 0.8 \mathrm{~mm} \\ & 4.8 \times 0.8 \mathrm{~mm}\end{aligned}$ |
| Any according to the application drawing | 0.7 to 3.5 mm | 0.7 to 3.5 mm |
| Shapes available: | Penetration of dust and water into the body is prevented by the special shape of the push button caps and their special guides <br> Sealing between the body and the panel is made by a PVC seal fixed on the body. | Penetration of dust and water into the body is prevented by the special shape of the push button caps and their special guides <br> Sealing between the body and the panel is made by an O-ring. Special panel cut-out is necessary.* |
| Details on panel cut out available on request | $30 \times 22 \mathrm{~mm}$ | $30 \times 11$ mm* |
|  |  |  |
|  |  |  |


| A1 | A2 | V8 |
| :---: | :---: | :---: |
|  |  |  |
| Rocker switch 1 pole | Rocker switch 1 and 2 pole | Rocker switch 1 and 2 pole |
| 16 (6) A 250V~T 100 | 16 (6) A 250V~T 100 | $\begin{aligned} & 12 \text { (4) A 250V~T } 125 \\ & 8 \text { (2) A 250V~ 5E4 T } 10 \end{aligned}$ |
|  |  | 10 A 125/250VAC |
| - | - | - |
| T $100^{\circ} \mathrm{C}$ | T $100^{\circ} \mathrm{C}$ | T $125^{\circ} \mathrm{C}\left(\mathrm{T} 65^{\circ} \mathrm{C}\right)$ |
| ON/OFF ON/OFF illuminated Change over | ON/OFF ON/OFF illuminated Change over | ON/OFF, ON/OFF illuminated change over change over illuminated, momentary NO, NO illuminated |
| IP 40 | IP 40 | IP 40 |
| $\left[\begin{array}{l} 6.3 \times 0.8 \mathrm{~mm} \\ 4.8 \times 0.8 \mathrm{~mm} \end{array}\right.$ | $\left[\begin{array}{l} 6.3 \times 0.8 \mathrm{~mm} \\ 4.8 \times 0.8 \mathrm{~mm} \end{array}\right.$ | $\begin{aligned} 6.3 \times 0.8 \mathrm{~mm} \\ 4.8 \times 0.8 \mathrm{~mm} \end{aligned}$ |
| 0.7 to 4.0 mm | 0.7 to 3.5 mm | 0.8 to 1.5 mm |
| The twin-wall feature ensures that any splash water which enters into the appliance cannot get into the switch chamber. |  |  |
| $30 \times 11 \mathrm{~mm}$ | $30 \times 22 \mathrm{~mm}$ | $34,2 \times 12,6 \mathrm{~mm}$ |
|  |  |  |
| 石 ${ }^{\circ}$ (10) |  |  |


| Standard |  |
| :---: | :---: | :---: | :---: |

## Switches

## Other features



## Markings

Rockers and frames can be printed with various symbols by hot stamping.
Please request our list of standard markings.
Special printing and screen printing are available on request.

## Colours

Standard colours for bodies, non-illuminated and rockers:
black, white, brown.
Standard colours for illuminated rockers:
red, yellow, green (translucent), transparent.
A wide range of alternative shades and special colours is available on request.

## Approvals

All Signal Lux switches have been tested according to EN 61058-1, in accordance with the standards of all European inspection offices. In addition, the most important production series also have the North American UL and CSA test marks according to UL 1054. Please, indicate clearly the requested approval/or approvals and rating (circuit-breaking capacity) you need.

## Technical information

## Complete product range.

This catalogue gives details of the main types of our switch range. In addition we produce many special versions for different applications. Please do not hesitate to contact us if your particular requirements are not shown.

## Materials used

Switch bodies: PA6.6
Illuminated actuators and lenses: Polycarbonate Inflammability: V2 according to UL 94
Current carrying parts: Brass (CuZn 37)
Contact points: Silver alloy
Circuit-breaking capacity
Details of the circuit-breaking capacity for each switch are given for the relevant productions series. The number in the brackets indicates the maximum rated current on inductive load. Some switch series are designed for capacitive loads or high inrush currents, additionally they have been submitted for approval. Please contact us if you need switches for these purposes.

## Rated voltage

All appliance switches are designed as standard for 250 V AC. However, we also have test marks for 400 V .
On request we can also supply illuminated switches with bulbs for $6 \mathrm{~V}, 12$ (14)V or $24(28) \mathrm{V}$.

## Ambient temperature

T85 to T125 refers to the temperature class for which the individual switch series have been approved by the inspection office.

## Electrical life

$1 E 4=10,000$ switching cycles
$5 E 4=50,000$ switching cycles
The electrical switching cycles refers to the number of operations of the switch based on the nominal load. If the circuit breaking capacity is reduced, the switch cycles will increase accordingly. The mechanical life of the switch is not included in that indication. Normally the mechanical life would overtake the electrical life by many times.

## Connection types

Depending on the type of switch, the following connections are available:
tab terminals $6.3 \times 0.8 \mathrm{~mm}$
tab terminals $4.8 \times 0.8 \mathrm{~mm}$
screw terminals M3
pcb-pins
solder eyelet
Please note the data in each production series.

## Fitting

Many switches have sprung plastic clips.
To fit simply press into the panel cut out.
Please ask for application drawing before using our switches.

We reserve the right to improve or modify our product range. All dimensions shown in this catalogue are not binding. Samples and assembly diagrams are available on request.

## SIGNAL LUX

## Signol Lights and Lenses

## Signal lights

| SERIES | 17.1/17.3 | 18.3 | 28.9 |
| :---: | :---: | :---: | :---: |
| Voltages <br> $110 \mathrm{~V}, 230$ (250) V, 400 V <br> 6 V, 12 (14) V, 24 (28) V <br> Further versions on request <br> Ambient temperatures $\begin{array}{r} 75^{\circ} \mathrm{C} \\ 90^{\circ} \mathrm{C} \\ 120^{\circ} \mathrm{C} \\ 150^{\circ} \mathrm{C} \end{array}$ <br> Data to be checked for each version |  |  |  |
| Panel cut out | - | - | - |
| Fitting methods | - | - | - |
| Panel thickness | - | - | - |
| Connections $2.8 \times 0.8 \mathrm{~mm}$ on request) | $\prod_{\mathbb{U}} \text { Leads }$ | T1TU Leads |  |
| Parallel resistor | On request | - | On request |
| Lens styles <br> Rectangular signal lights see our short list "Rocker switches" and "Push button switches". |  |  | Fixing arrangement |
| Special features | Insulated style with heat shrinkable sleeve on request. LED version available on request. | Signal lamps with leads and resine sealing are waterproof. | Signal lamps with integral clips for fixing directly into appliance body. LED version available on request. |
| Anti-rotation rib | - | - | - |
| Dimensions <br> Please consider the different overall lengths between the different connection types. <br> Tab terminal <br> Signal Click ${ }^{\circ}$ |  |  |  |
| Approvals |  |  |  |


| 21.3 | 21.4/21.8 | 24 |
| :---: | :---: | :---: |
|  |  |  |
| - | $5.4 \times 9 \mathrm{~mm}$ | $\varnothing 6 \mathrm{~mm}$ |
| - | Assembly by connecting the lamp and lens from either side of panel | Self locking ring. |
| - | .- | - |
| $\begin{aligned} & \square 4.8 \times 0.8 \mathrm{~mm} \\ & 6.3 \times 0.8 \mathrm{~mm} \\ & \prod_{0} \text { Leads } \\ & \$ \text { Signal Click } \\ & \text { Crimped } \end{aligned}$ | $4.8 \times 0.8 \mathrm{~mm}$ $6.3 \times 0.8 \mathrm{~mm}$ <br> Leads <br> Signal Click ${ }^{\ominus}$ <br> Crimped | WU Leads |
| - | On request | - |
|  | Fixing arrangement <br> 21.4 | 24.2 <br> $\xrightarrow[-1]{\square}$ <br> 24.0 <br> ( |
| Signal lamps with integral clips for fixing directly into appliance body. LED version available on request. | LED version available on request. |  |
| - | - | - |
|  |  |  |
|  |  |  |


| $24.4 / 24.5$ | 27 | $27 . \mathbf{P}$ |
| :---: | :---: | :---: | :---: |


|  |
| :---: | :---: | :---: | :---: | :---: |


| $33$ | 41 | 51 |
| :---: | :---: | :---: |
|  |  |  |
| $\varnothing 10 \mathrm{~mm}$ | $\varnothing 12 \mathrm{~mm}$ | $\varnothing 12 \mathrm{~mm}$ |
| Plastic clips． | Plastic clips． | Serrated ring M $13 \times 1 \mathrm{~mm}$ |
| 0．8－2．0 mm | 0．8－2．0 mm | $0.5-6.5 \mathrm{~mm}$ |
| $\begin{aligned} & \square 4.8 \times 0.8 \mathrm{~mm} \\ & 6.3 \times 0.8 \mathrm{~mm} \\ & \prod_{1} \text { Leads } \\ & 8 \text { Signal Click } \\ & \{\text { Crimped } \end{aligned}$ | $\left[\begin{array}{l} 4.8 \times 0.8 \mathrm{~mm} \\ 6.3 \times 0.8 \mathrm{~mm} \end{array}\right.$ | ［． $\begin{aligned} & 4.8 \times 0.8 \mathrm{~mm} \\ & 6.3 \times 0.8 \mathrm{~mm}\end{aligned}$ |
| On request | On request | On request |
|  | Other shapes available |  |
| Further lens styles available． <br> LED version available on request． <br> On request | ＊Chrome bezel on request． LED version available on request． <br> See drawing | Additional rubber washer for use between lens and panel is available． <br> ＊Chrome bezel on request． LED version available on request． |
|  |  |  |
| 类 c NV $^{\text {us }}$ | 曾 c $\mathbf{N V}^{\text {us }}$ | 曾 c No $^{\text {us }}$ |


| 43 | $53$ | 42 |
| :---: | :---: | :---: |
|  |  |  |
| $\varnothing 13 \mathrm{~mm}$ | $\varnothing 13 \mathrm{~mm}$ | $\varnothing 14$ mm |
| Plastic clips． | Serrated ring M $13 \times 1 \mathrm{~mm}$ | Plastic clips． |
| 0．8－2．0 mm | $0.5-6.5 \mathrm{~mm}$ | 0．8－2．0 mm |
| $\left[\begin{array}{l} 4.8 \times 0.8 \mathrm{~mm} \\ 6.3 \times 0.8 \mathrm{~mm} \end{array}\right.$ | $\text { [. } \begin{aligned} & 4.8 \times 0.8 \mathrm{~mm} \\ & 6.3 \times 0.8 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & \prod 4.8 \times 0.8 \mathrm{~mm} \\ & 6.3 \times 0.8 \mathrm{~mm} \\ & \prod_{0} \text { Leads } \end{aligned}$ |
| On request | On request | On request |
|  |  |  |
| ＊Chrome bezel on request． LED version available on request． | Additional rubber washer for use between lens and panel is available． <br> ＊Chrome bezel on request． | Also available with addi－ tional fresnel lens for high illumination．LED version available on request． |
| － | request． | See drawing |
|  |  |  |
| 食 $\mathrm{Al}^{\text {u }} \mathrm{us}$ | 食 $\boldsymbol{\sim}$ | 食 $\mathrm{Al}^{\text {u }}$ us |



Lenses available for Series 21.
Technical information in 21 Series column.
On request

| 43 | $53$ | 59 |
| :---: | :---: | :---: |
|  |  |  |
| $\varnothing 13 \mathrm{~mm}$ | $\varnothing 13 \mathrm{~mm}$ | $\varnothing 13 \mathrm{~mm}$ |
| - | - | - |
| 0.8-2.0 mm | $0.5-6.5 \mathrm{~mm}$ | 0.8-2.0 mm |
|  |  |  |
| - | - | - |
| Other shapes available | Other shapes available |  |

Lenses available for Series 21. Technical information in 21 Series column.
On request

## Technical Information

## Signal click

Signal click is a patented system of quick connection for signal lights. Two versions are available: one with leads with cylindrical terminals of 2 mm nominal diameter that can be easily inserted in the internal parts of signal lamps;
another one that is equipped with an innovative connecting system with a terminal with an hook at the end and a locking tongue in plastic material. This solution allows a quick and effective assembly without orientation problems.


## Signal lights with leads

The signal lights can be sealed with resin to the base on request. This improves the strength of extraction and assures the water protection. Special design, different types and length of leads and cables are available.

## Bulb models

6 V , 12 (14) V, $24(28) \mathrm{V}$ with filament bulbs or LEDS.
110 V, 230 (250) V, 400 V with neon or fluorescent bulbs. Standard: 230 (250) V.

## Standard rating

$6-28 \mathrm{~V}=1.0 \mathrm{~W}$ max
$110-400 \mathrm{~V}=0.5 \mathrm{~W}$ max

## Neon, fluorescent and led light sources

Neon bulbs are suitable for signal lights with red, yellow, transparent or orange lens color. For blue or green lenses we recommend to use fluorescent bulbs. It is now available the version with led, that offers vivid colours, higher brightness and longer life.

## Ignition voltage

For $\quad 110 \mathrm{~V}=70-95 \mathrm{~V}$
For $230 / 250 \mathrm{~V}=130 \mathrm{~V}$
For $\quad 400 \mathrm{~V}=187 \mathrm{~V}$
Special versions are available on request.

## Complete range of products

The above information gives details of the most common series of standard signal lights. For more information on custom solutions please contact us.

## Modifications

We reserve the right to improve or modify our range of products. All dimensions shown on this catalogue are not binding. Samples and drawings are available on request.

SIGNAL LUX

## Pressure Switches

| SERIES | P1 |
| :---: | :---: |
|  |  |
| Electrical function | 1 pole No |
| Switch Rating | $\begin{gathered} 250 \mathrm{~mA} 250 \mathrm{~V} \sim 1 \text { 1E4 } \\ 20 \mathrm{~mA} 250 \mathrm{~V} \sim 5 \mathrm{FE4} \\ 250 \mathrm{~mA} 125 / 250 \mathrm{VAC} \text { UL/CSA } \end{gathered}$ |
| Ambient temperature | $85^{\circ} \mathrm{C}$ |
| Temperature of pressure medium | $85^{\circ} \mathrm{C}$ |
| Electrical connections | Solder pins 1.0 mm - Leads with various insulation, diameter and length |
| Pressure range Pressure: | +15 to +800 mbar$15-20$ mbar: $+/-25 \%$ <br> $21-25$ mbar: $+/-15 \%$ |
| Vacuum: | - 800 to -15 mbar $25-800 \mathrm{mbar}:+/-10 \%$ |
| Pressure connections | Inlet 4.0 mm for tube connection |
| Max. Working pressure | 1000 mbar |
| Switch hysteresis | Nearly no hysteresis |
| Pressure medium | Air or non hazardous gases only |
| Fixing methods | Soldering on PBC/leads on request |
| Materials | Cover: PA 6.6 |
|  | Base: PBT |
|  | Adiustment screw: PA 6.6 |
|  | Contact carrying parts: brass silver plated (gold plating on request) |
|  | Membrane: nitrile, EPDM (Silicone, Perbunan on requestl) according to application |
| Drawings |  |
| Approvals According to UL 508 and enec 60703 | c ${ }^{\text {dro }}$ |



| 1 pole NO | 1 pole NC |
| :---: | :---: |
| 2,5(0,5) A 250V ~ 1E4 (pmax:2,5 bar) | 2,5(0,5) A 250V ~ 1E4 (pmax:2,5 bar) |
| 1 A 250 V ~ 5E4 (pmax:0,8 bar) | 0,5 A 250V ~ 5E4 (pmax:2,5 bar) |
| 0,02 A 250V ~ 5E4 (pmax:0,8 bar) | 0,02 A 250V ~ 5E4 (pmax:2,5 bar) |
| 2,5A 125/250VAC UL/CSA | 2,5A 125/250VAC UL/CSA |
| $85^{\circ} \mathrm{C}$ |  |
| $85^{\circ} \mathrm{C}$ |  |

Tabs terminals $6,3 \times 0,8 \mathrm{~mm}$
Tabs terminals $4,8 \times 0,8 \mathrm{~mm}$

| +15 to +2500 mbar $+/-10 \%$ |
| :---: |$\quad+15$ to $+2500 \mathrm{mbar}+/-15 \%$

Pressure: Non hazardous gases - Liquids (up to 24 V only) Vacuum: Non hazardous gases

Plastic clips for $0,5 \div 2,5 \mathrm{~mm}$ panel thickness (version with inlet only)

| Lower body: PA 6.6 |
| :---: |
| Upper body: PA 6.6 |
| Adjustment screw: PA 6.6 |
| Contact carrying parts: Brass Silver plated (gold plating on request) |
| Membrane: nitrile, EPDM (Silicone, Perbunan on request) according to application |



## Other features

## Applications

P1


79


The sectional drawing explains the function of our pressure switches series Pl and 79 . This design does not cater for a hysteresis. The method of fixing the solder pins or tabs to the switch body does not allow for absolute air tightness.
For this reason the Pl and 79 series are well suited for detection of dinamic pressure (or vacuum) levels, while some precautions are recommended for applications in which static vacuum or pressure has to be maintained.

## M3



As opposed to series 79 and P1 where the electrical part is integrated into the pressure chamber of the switches, the electrical unit of our pressure switches M3 consists in a standard micro switch.
Therefore it is possible to use these type not only for transmission of electrical signals but also for direct switching of high resistive loads.

Generally all applications are based on electric switching (opening/closing) of contacts with a set pressure value. Particular attention should be taken in evaluating the type of fluid chosen to transmit the pressure or the decreased pressure to the manostat.

In general, the transmission of pressure through fluids such as air, nitrogen, non-explosive gas and vapour is considered standard. Water and all fluids that can conduct electricity need special precautions. Special versions of these applications are available upon request

The examples of application are numerous such as, 'full bag' indication on vacuum cleaners, level of the liquid on dishwashers and coffee machines, pneumatic safety edges, gates automation, detection of CO2 level on drinks vending machines, water level on irons, protection devices of pumps, medical appliances.


## Air filters

Pressure switch detects the varia tion in delta pressure due to filter and pilots the switching off of the ventilator or gives the alarm through a signal light


Home steam generators
Pressure switch controls the heater resistor in order to maintain steam pressure.


## Vacuum pump control

Pressure switch stops the pump at the vacuum setting calibrated by the user.


## Gate security systems

Pressure switch measures the pressure applied to the rubber protection on the gate and stops the electric actuator

## Chimney

Pressure switch detects insuffi cient air depression or fan malfunctioning

## Hydraulic circuits

Pressure switch detects insufficient water pressure or pump malfunctioning


