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## General information

When selecting lamps, the button/lens color of the device should be taken into account.

| transparent <br> colors | Suitable for |  |  |  |
| :--- | :--- | :--- | :--- | :---: |
|  | Filament <br> lamps | Neon lamps | LED |  |
| colorless | limited | good | good |  |
| red | good | good | good |  |
| yellow | good | good | good |  |
| green | good | limited | limited |  |
| blue | limited | limited | good |  |

transparent $=$ clear, grooved on inside for better light diffusion
translucent $=$ translucent but not clear
Operating life specifications of lamps refer to AC operation. For DC operation, these values are reduced by approximately $40 \%$. (Operating life specifications: when not mounted).

Neon lamps: rated current tolerance +/- 30\%
We recommend to combine colored lenses with the coresponding LED colors in order to achieve a really intensive color.
On the other hand, when combining e. g. a white LED with a colored lens, this will produce a dim color.

## LED Protective Diode

LED may be damaged when anode and cathode are connected in a wrong way. An integrated protective diode protects the LED against wrong polarization.

## LED brightness classes

LEDs are subject to production-related variations in brightness over which we have no control with the manufacturers. It is therefore not possible to arrange a delivery in a specific brightness class, and deviations accordingly do not constitute grounds for complaint regarding our products.

The majority of the LEDs we use are delivered from our suppliers in selected brightness classes. In this case, the suppliers in selected brightness classes. In this case, the
brightness class is shown on a label on the switch's rack packaging.

Where the lighting is required to have a uniform brightness - for aesthetic reasons, for example - this can be achieved in the system by means of the circuitry (with a series resistance, for example).

## CE-Conformity

Illumination like lamps and LED displays are exchangeable, overall available as merchandise and not steadily connected with the network - thus, the Low-voltage Directive 73/23/EWG does not apply.

## EMC

The components of this catalogue are within the meaning of the law concerning the electromagnetic conformity (= EMC) "basic components as f. ex. switches, signal lamps or like" and, therefore, do not all within the scope of the EMC.

## Declarations of Conformity

Declarations of conformity for lamps are not available.

Luminous elements

Luminous elements

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# Socket W $2 \times 4.6 d$, LED superbright 

| Socket | Color | Forward voltage typ. UF at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| W $2 \times 4.6 \mathrm{~d}$ | red | 24 | 12 mA | 70 mcd | $1.90 .690 .361 / 0000$ |
| W $2 \times 4.6 \mathrm{~d}$ | yellow | 24 | 12 mA | 80 mcd | $1.90 .690 .363 / 0000$ |
| W $2 \times 4.6 \mathrm{~d}$ | green | 24 | 12 mA | 600 mcd | $1.90 .690 .362 / 0000$ |
| W $2 \times 4.6 \mathrm{~d}$ | blue | 24 | 12 mA | 300 mcd | $1.90 .690 .364 / 0000$ |
| W $2 \times 4.6 \mathrm{~d}$ | white | 24 | 12 mA | 400 mcd | $1.90 .690 .365 / 0000$ |

All LEDs are provided with a protective diode. Operating temperature $-30^{\circ} \mathrm{C} \ldots+65^{\circ} \mathrm{C}$.
For more intensive colors, please combine colored lenses with suitable LED colors.

## Accessoires:

Lamp extractor for lamp diameter 5 mm : 1.90.900.003/0000

## ACCESSORIES

LED


## Socket Bi-Pin T 1, LED

| Socket | Color | Forward voltage typ. $U_{F}$ at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Bi-PinT 1 | red | 2 | 10 mA | $26-52 \mathrm{mcd}$ | $1.90 .691 .026 / 0000$ |
| Bi-PinT 1 | yellow | 2 | 10 mA | $26-52 \mathrm{mcd}$ | $1.90 .691 .028 / 0000$ |
| Bi-PinT 1 | green | 2 | 10 mA | $9-33 \mathrm{mcd}$ | $1.90 .691 .027 / 0000$ |

Voltage $U_{B}$ : External resistor: $\mathrm{Rv}=\left(\mathrm{U}_{\mathrm{B}}-\mathrm{U}_{\mathrm{F}}\right): \mathrm{IF}$
A suitable series resistor must be fitted externally.
Recommended resistor ratings:

- for $5-7 \mathrm{~V}=270 \Omega 0.25 \mathrm{~W}$
- for $12-14 \mathrm{~V}=680 \Omega 0.50 \mathrm{~W}$
- for $24-28 \mathrm{~V}=1500 \Omega 1.00 \mathrm{~W}$

Forward voltage $\mathrm{U}_{\mathrm{F}}: 2 \mathrm{~V}$ (3 V max.)
Reverse voltage $U_{R}: 5 \mathrm{~V}$
Reverse current IR: $100 \mu \mathrm{~A}$.
Forward current: 10 mA
Operating temperature: $-20^{\circ} \mathrm{C} \ldots+60^{\circ} \mathrm{C}$
Storage temperature: $-30^{\circ} \mathrm{C} \ldots+80^{\circ} \mathrm{C}$
Operating life: $100,000 \mathrm{~h}$ at $\mathrm{T} u=25^{\circ} \mathrm{C}$ )
Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.001/0000

| Socket | Color | Forward voltage typ. U $\mathbf{U}_{\mathbf{F}}$ at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Bi-Pin T 1 | red | 24 | 11 mA | 70 mcd | $1.90 .690 .351 / 0000$ |
| Bi-Pin T 1 | yellow | 24 | 11 mA | 80 mcd | $1.90 .690 .353 / 0000$ |
| Bi-Pin T 1 | green | 24 | 11 mA | 600 mcd | $1.90 .690 .352 / 0000$ |
| Bi-Pin T 1 | blue | 24 | 11 mA | 300 mcd | $1.90 .690 .354 / 0000$ |
| Bi-Pin T 1 | white | 24 | 11 mA | 400 mcd | $1.90 .690 .355 / 0000$ |

All LEDs are provided with a protective diode. Operating temperature $-30^{\circ} \mathrm{C} \ldots+65^{\circ} \mathrm{C}$.
For more intensive colors, please combine colored lenses with suitable LED colors.

## Accessoires:

Lamp extractor for lamp diameter 4 mm: 1.90.900.001/0000

## Socket Bi-Pin T 1, LED superbright

LED

## Socket T 4.5, LED

| Socket | Color | Forward voltage typ. $\mathbf{U}_{\mathbf{F}}$ at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| T 4.5 | red | $2-3 \mathrm{~V}$ | 10 mA | $26-52 \mathrm{mcd}$ | $1.90 .692 .001 / 0000$ |
| T 4.5 | yellow | $2-3 \mathrm{~V}$ | 10 mA | $26-52 \mathrm{mcd}$ | $1.90 .692 .003 / 0000$ |
| T 4.5 | green | $2-3 \mathrm{~V}$ | 10 mA | $9-33 \mathrm{mcd}$ | $1.90 .692 .002 / 0000$ |
|  |  |  |  |  |  |

Voltage $U_{B}$ : External resistor: $R v=\left(U_{B}-U_{F}\right): I F$
A suitable series resistor must be fitted externally.
Recommended resistor ratings:

- for $5-7 \mathrm{~V}=270 \Omega 0.25 \mathrm{~W}$
- for $12-14 \mathrm{~V}=680 \Omega 0.50 \mathrm{~W}$
- for $24-28 \mathrm{~V}=1500 \Omega 1.00 \mathrm{~W}$

Forward voltage $\mathrm{U}_{\mathrm{F}}: 2 \mathrm{~V}$ (3 V max.)
Reverse voltage $U_{R}: 5 \mathrm{~V}$
Reverse current IR: $100 \mu \mathrm{~A}$.
Forward current: 10 mA
Operating temperature: $-20^{\circ} \mathrm{C} \ldots+60^{\circ} \mathrm{C}$
Storage temperature: $-30^{\circ} \mathrm{C} \ldots+80^{\circ} \mathrm{C}$
Operating life: $100,000 \mathrm{~h}$ at $\mathrm{T} u=25^{\circ} \mathrm{C}$ )

## Socket T 4.5, LED superbright



| Socket | Color | Forward voltage typ. $\mathbf{U}_{\mathbf{F}}$ at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| T 4.5 | red | 24 | 13 mA | 90 mcd | $1.90 .690 .331 / 0000$ |
| T 4.5 | yellow | 24 | 13 mA | 100 mcd | $1.90 .690 .333 / 0000$ |
| T 4.5 | green | 24 | 13 mA | 700 mcd | $1.90 .690 .332 / 0000$ |
| T 4.5 | blue | 24 | 13 mA | 380 mcd | $1.90 .690 .334 / 0000$ |
| T 4.5 | white | 24 | 13 mA | 500 mcd | $1.90 .690 .335 / 0000$ |

All LEDs are provided with a protective diode. Operating temperature $-30^{\circ} \mathrm{C} \ldots+65^{\circ} \mathrm{C}$.
For more intensive colors, please combine colored lenses with suitable LED colors.

## Accessoires:

Lamp extractor for lamp diameter 5-6 mm: 1.90.900.004/0000

## ACCESSORIES

LED


| Socket | Color | Forward voltage typ. UF at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I F}_{\mathbf{F}}$ | Light intensity | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| BA 9 s | red | 24 | 15 mA | 250 mcd | $1.90 .690 .341 / 0000$ |
| BA 9 s | yellow | 24 | 15 mA | 250 mcd | $1.90 .690 .343 / 0000$ |
| BA 9 s | green | 24 | 15 mA | 1000 mcd | $1.90 .690 .342 / 0000$ |
| BA 9 s | blue | 24 | 15 mA | 450 mcd | $1.90 .690 .344 / 0000$ |
| BA 9 s | white | 24 | 15 mA | 600 mcd | $1.90 .690 .345 / 0000$ |

All LEDs are provided with a protective diode. Operating temperature $-30^{\circ} \mathrm{C} \ldots+65^{\circ} \mathrm{C}$.
For more intensive colors, please combine colored lenses with suitable LED colors.
Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000


## THT LED 3 mm, without base

| Color | Forward voltage typ. $\mathbf{U}_{\mathbf{F}}$ at $\mathbf{I}_{\mathbf{F}}$ | Max. current, $\mathbf{I}_{\mathbf{F}}$ | Order no. |
| :--- | :--- | :--- | :--- |
| red | $1,6 \mathrm{~V} / 1 \mathrm{~mA}$ | 30 mA | $1.90 .690 .228 / 0000$ |
| red | $1.9 \mathrm{~V} / 20 \mathrm{~mA}$ | 50 mA | $1.90 .690 .269 / 0000$ |
| yellow | $1.9 \mathrm{~V} \mathrm{/20} \mathrm{~mA}$ | 50 mA | $1.90 .690 .267 / 0000$ |
| green | $3.2 \mathrm{~V} \mathrm{/20} \mathrm{~mA}$ | 35 mA | $1.90 .690 .284 / 0000$ |
| blue | $3,6 \mathrm{~V} / 20 \mathrm{~mA}$ | 30 mA | $1.90 .690 .282 / 0000$ |
| white | $3,6 \mathrm{~V} / 20 \mathrm{~mA}$ | 30 mA | $1.90 .690 .295 / 0000$ |

## FILAMENT/ NEON LAMPS

Wedge base W $2 \times 4.6 d$, filament lamp, DIN 49846


| $\boldsymbol{R}$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 12 V | 0.08 A | 1.2 W | 5 mm | 20 mm | $15,000 \mathrm{~h}$ | $1.90 .120 .012 / 0000$ |
| $24-30 \mathrm{~V}$ | 0.04 A | 1 W | 5 mm | 20 mm | 1000 h | $1.90 .120 .005 / 0000$ |
| 24 V | 0.04 A | 1.2 W | 5 mm | 20 mm | 7000 h | $1.90 .120 .011 / 0000$ |
| 48 V | 0.025 A | 1.2 W | 5 mm | 19 mm | 2500 h | $1.90 .120 .010 / 0000$ |
| 60 V | 0.02 A | 1.2 W | 5 mm | 19 mm | 3300 h | $1.90 .120 .009 / 0000$ |

[^0]
## Accessoires:

Lamp extractor for lamp diameter 5 mm: 1.90.900.003/0000

Bi-PinT 1 base, filament lamp

| $\boldsymbol{R}$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $24-28 \mathrm{~V}$ | 0.016 A | $0.4-0.56 \mathrm{~W}$ | - | - | 5000 h | $1.90 .180 .473 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 4 mm : 1.90.900.001/0000


# Bi-Pin T ¼ base, filament lamp 

| $\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 12 V | 0.06 A | 0.72 W | 4.3 mm | 10.5 mm | $10,000 \mathrm{~h}$ | $1.90 .180 .474 / 0000$ |
| 28 V | 0.03 A | 0.84 W | 4.3 mm | 10.5 mm | 5000 h | $1.90 .180 .475 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40\%.

## Accessoires:

Lamp extractor for lamp diameter 4 mm: 1.90.900.002/0000


$$
\text { T } 4.5 \text { base, filament lamp }
$$

| $\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 12 V | 0.04 A | 0.48 W | 4.2 mm | 16.5 mm | $10,000 \mathrm{~h}$ | $1.90 .100 .022 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 4 mm: 1.90.900.002/0000

## T 4.6 base, filament lamp

| $\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 12 V | 0.04 A | 0.3 W | 4 mm | 22 mm | 5000 h | $1.90 .100 .012 / 0000$ |
| 24 V | 0.02 A | 0.5 W | 4 mm | 22 mm | 5000 h | $1.90 .100 .013 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 4 mm : 1.90.900.002/0000

## BA 9s base (MBC/MCC), filament lamp, shape G, DIN 72601




Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter $10.4 \mathrm{~mm}: 1.90 .900 .006 / 0000$

## BA 9s base (MBC/MCC), filament lamp, shape A, DIN 49851



| Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12-15V | 0.166 A | 2 W | 11 mm | 29 mm | 10,000 h | 1.90.060.132/0000 |
| 24-30V | 0.083 A | 2 W | 11 mm | 29 mm | 10,000 h | 1.90.060.133/0000 |
| 110-130 V | 0.018 A | 2 W | 11 mm | 30 mm | 25,000 h | 1.90.060.137/0000 |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

[^1]
## BA 9s base (MBC/MCC), neon lamp

$\boldsymbol{l l l l l l l l}$| Rated voltage | Rated current | Rated power | Diameter max. |
| :--- | :--- | :--- | :--- |
| 220 ACV | $0.0015-0.0018 \mathrm{~A}$ | - | 10 mm |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40\%.

## Accessoires:

Lamp extractor for lamp diameter $11 \mathrm{~mm}: 1.90 .900 .007 / 0000$


$\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| AC 220 V | $0.0015-0.0018 \mathrm{~A}$ | - | 10 mm | 28 mm | - | $1.90 .560 .102 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

| $\boldsymbol{R}$ | Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | Order no.

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter $14 \mathrm{~mm}: 1.90 .900 .008 / 0000$

## BA 15d base, filament lamp, DIN 49850

# BA 15d base, filament lamp, DIN 49852 



| $\boldsymbol{R}$ | Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | Order no. |  |  |  |  | $1.90 .070 .105 / 0000$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $24-30 \mathrm{~V}$ | 0.165 A | 4 W | 17 mm | 57 mm | 2000 h |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

## BA 15d base, filament lamp



$\rightarrow$ Rated voltage $\quad$ Rated current $\quad$ Rated power $\quad$ Diameter max. |  | Length | Medium operating life AC | Order no. |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 24 V | 0.2 A | 5 W | 16 mm | 36 mm | 2000 h |
| $220-260 \mathrm{~V}$ | $0.02-0.03 \mathrm{~A}$ | $5-7 \mathrm{~W}$ | 16 mm | 36 mm | 1000 h |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

## E 10 (MES) base, filament lamp



| $\boldsymbol{R a t e d}$ voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $24-30 \mathrm{~V}$ | 0.083 A | 2 W | 11 mm | 29 mm | 1000 h | $1.90 .010 .033 / 0000$ |
| $110-130 \mathrm{~V}$ | 0.018 A | 2 W | 11 mm | 30 mm | 1000 h | $1.90 .010 .037 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000


## E 10 (MES) base, neon lamp

$\rightarrow$ Rated voltage $\quad$ Rated current $\quad$ Rated power $\quad$ Diameter max. |  | Length | Medium operating life AC | Order no. |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 220 ACV | $0.0015-0.0018 \mathrm{~A}$ | - | 10.4 mm | 28 mm | - |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40\%.

## Accessoires:

Lamp extractor for lamp diameter $10.4 \mathrm{~mm}: 1.90 .900 .006 / 0000$


# E 14 base, shape $B_{\text {, }}$ filament lamp, DIN 49850 

| $\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $24-30 \mathrm{~V}$ | 0.083 A | 2 W | $14 / 12.5 \mathrm{~mm}$ | 31 mm | 1000 h | $1.90 .020 .033 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.
Accessoires:
Lamp extractor for lamp diameter 14 mm: 1.90.900.008/0000

| Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24-30V | 0.165 A | 4W | 17 mm | 57 mm | 1000 h | 1.90.020.105/0000 |
| 220-260 V | 0.023 A | 5 W | 17 mm | 57 mm | 1000 h | 1.90.020.115/0000 |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

# E 14 base, filament lamp <br> shape A, DIN 49852 

## E 14 base, filament lamp




Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

## E 14 base, neon lamp, shape $B$

Chtitar

| $\rightarrow$ Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC | Order no. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 220 ACV | $0.0014-0.0026 \mathrm{~A}$ | - | $14.1 / 11.5 \mathrm{~mm}$ | 31 mm | - | $1.90 .520 .002 / 0000$ |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## Accessoires:

Lamp extractor for lamp diameter 14 mm: 1.90.900.008/0000

# Tubular lamp, S 8.5 base, filament lamp, shape L, DIN 72601 

$\rightarrow$ Rated voltage $\quad$ Rated current $\quad$ Rated power $\quad$ Diameter max. |  | Length | Medium operating life AC | Order no. |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 24 V | - | 3 W | 11.5 mm | 39 mm | 200 h |

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.

## ACCESSORIES



# Tubular lamp, S 8.5 base, filament lamp, shape K, DIN 72601 

| $\boldsymbol{R}$ | Rated voltage | Rated current | Rated power | Diameter max. | Length | Medium operating life AC |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | Order no.

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40\%.

OTHER ACCESSORIES

## Other accessories

## ACCESSORIES

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## ACCESSORIES

## RAFIX <br> Insulating housing, Ø $\mathbf{\varnothing} 6.2$ mm



Panel cut-out



- Attractive plastic housing to accommodate up to 4 control components
- 2 cable entries prepared: 1-,2-,3-part: M20x1.5, 4-part: M25x1.5
- Degree of protection IP65 to DIN EN 60529
- All grey housings with overlay, legending possible with legend inserts
- Wall mounting with 2 screws through housing bottom prepared
- Dimensions (feature 1) x $100 \mathrm{~mm} \times 74 \mathrm{~mm}$
- Accessories: 50 pre-perforated legend inserts on a DIN A4 sheet
- Housings with other features, e.g. RAFIX 16F, on request.


## ACCESSORIES

HOUSING
-Table (continued) -
RAFIX - Insulating housing, Ø $\mathbf{1 6 . 2} \mathbf{~ m m}$
Accessoires:
Label sheet for housing (50 foil legend inserts): 5.40.451.283/0000


## RAFIX <br> Insulating housing IP65, Ø 22.3 mm



Panel cut-out to IEC 60947-5-1

| Description | Number of cut-outs | $\varnothing$ | Dimensions | Order no. |
| :---: | :---: | :---: | :---: | :---: |
| RAFIX - Insulating housing, $\varnothing 22.3 \mathrm{~mm}$, IP65, 1-module, light grey/dark grey | 1 | 22,3 mm | $100 \times 55 \times 74 \mathrm{~mm}$ | 1.20.810.201/0000 |
| RAFIX - Insulating housing, $\emptyset 22.3 \mathrm{~mm}$, IP65, 1-module, yellow/yellow | 1 | 22,3 mm | $100 \times 55 \times 74 \mathrm{~mm}$ | 1.20.810.202/0000 |
| RAFIX - Insulating housing, $\varnothing 22.3 \mathrm{~mm}$, IP65, 2-module, light grey/dark grey | 2 | 22,3 mm | 100x115x74 mm | 1.20.820.201/0000 |
| RAFIX - Insulating housing, $\varnothing 22.3 \mathrm{~mm}$, IP65, 3-module, light grey/dark grey | 3 | 22,3 mm | $100 \times 115 \times 74 \mathrm{~mm}$ | 1.20.830.201/0000 |
| RAFIX - Insulating housing, Ø 22.3 mm, IP65, 4-module, light grey/dark grey | 4 | 22,3 mm | 100x145×74 mm | 1.20.840.201/0000 |

- Plastic housing to accommodate up to 4 control components
- 2 cable entries prepared: 1-,2-,3-part: M20x1.5, 4-part: M25x1.5
- Degree of protection IP65 to DIN EN 60529
- All grey housings with overlay, legending possible with legend inserts
- Wall mounting with 2 screws through housing bottom prepared
- Dimensions: (feature 1) $\times 100 \mathrm{~mm} \times 74 \mathrm{~mm}$
- Accessories: 50 pre-perforated legend inserts on a DIN A4 sheet


## Accessoires:

Label sheet for housing (50 foil legend inserts): 5.40.451.283/0000

EMERGENCY STOP LABELS

## Emergency stop label, PVC adhesive, Ø 16.3 mm



| Dimensions | inside Ø | Label | Order no. |
| :---: | :---: | :---: | :---: |
| $\emptyset 40 \mathrm{~mm}$ | 16.3 mm | „NOT-HALT, EMERGENCY STOP, ARRET D'URGENCE, EMERGENZA" | 5.76.204.114/0400 |
| $\emptyset 40 \mathrm{~mm}$ | 16.3 mm | $4 \times$ "NOT-HALT" | 5.76.204.116/0400 |
| $\emptyset 40 \mathrm{~mm}$ | 16.3 mm | 4 x „NOT-AUS" | 5.76.204.118/0400 |
| $\varnothing 40 \mathrm{~mm}$ | 16.3 mm | $4 \times$ „EMERGENCY STOP" | 5.76.204.120/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | - | 5.76.204.400/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | 1 x "NOT-AUS" | 5.76.204.401/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | $1 \times$ „EMERGENCY STOP" | 5.76.204.403/0400 |
| $\varnothing 60 \mathrm{~mm}$ | 16.3 mm | „NOT-HALT, EMERGENCY STOP, ARRET D'URGENCE, EMERGENZA" | 5.76.204.106/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | $4 \times$ „NOT-HALT" | 5.76.204.108/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | 4 x "NOT-AUS" | 5.76.204.110/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 16.3 mm | $4 \times$ „EMERGENCY STOP" | 5.76.204.112/0400 |

## Emergency stop label, Ø 22.3 mm



$\rightarrow$ Dimensions |  | inside $\varnothing$ | Label | Order no. |
| :--- | :--- | :--- | :--- |
| $36 \times 64 \mathrm{~mm}$ | 22.3 mm | - | $5.76 .205 .011 / 0400$ |
| $\emptyset 40 \mathrm{~mm}$ | 22.3 mm | "NOT-HALT, EMERGENCY STOP, ARRET D'URGENCE, EMERGENZA" | $5.76 .204 .115 / 0400$ |
| $\emptyset 40 \mathrm{~mm}$ | 22.3 mm | $4 \times$ "NOT-HALT" | $5.76 .204 .117 / 0400$ |

## ACCESSORIES

- Table (continued) -

Emergency stop label, $\varnothing \mathbf{\varnothing} 22.3$ mm

| $\rightarrow$ Dimensions | inside Ø | Label | Order no. |
| :---: | :---: | :---: | :---: |
| $\emptyset 40 \mathrm{~mm}$ | 22.3 mm | 4 x „NOT-AUS" | 5.76.204.119/0400 |
| $\emptyset 40 \mathrm{~mm}$ | 22.3 mm | 4 x „EMERGENCY STOP" | $5.76 .204 .121 / 0400$ |
| $\varnothing 60 \mathrm{~mm}$ | 22.3 mm | 1 x „NOT-AUS" | $5.76 .207 .001 / 0400$ |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | „EMERGENCY-STOP / ARRET D'URGENCE" | 5.76.207.002/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | 1 x „NOT-AUS" | 5.76.204.101/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | 1 x „ARRET D'URGENCE" | 5.76.204.102/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | $1 \times$ „EMERGENCY STOP" | 5.76.204.103/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | „NOT-HALT, EMERGENCY STOP, ARRET D'URGENCE, EMERGENZA" | 5.76.204.107/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | $4 \times$ „NOT-HALT" | 5.76.204.109/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | $4 \times$ "NOT-AUS" | 5.76.204.111/0400 |
| $\emptyset 60 \mathrm{~mm}$ | 22.3 mm | 4 x „EMERGENCY STOP" | 5.76.204.113/0400 |



## LUMOTAST 75 IP40/65 Blanking cap, black, Ø 16.2 mm



$\rightarrow$| Installation dimensions | Dimenions | Color | Order no. |
| :--- | :--- | :--- | :--- |
| $\emptyset 16,2 \mathrm{~mm}$ | $18 \times 18$ | black | $5.52 .006 .020 / 0103$ |
| $\emptyset 16,2 \mathrm{~mm}$ | $18 \times 24$ | black | $5.52 .006 .021 / 0100$ |
| $\emptyset 16,2 \mathrm{~mm}$ | $\emptyset 18$ | black | $5.52 .006 .022 / 0100$ |

# ACCESSORIES 

BLANKING CAPS

## RAFIX 16 <br> Blanking cap with sealing and threaded ring, $\varnothing 16.2 \mathrm{~mm}$



| $\rightarrow$ Description | Order no. |
| :--- | :--- |
| Blanking cap complete with sealing disc and ring nut, square | $5.05 .800 .049 / 0100$ |
| Blanking cap complete with sealing disc and ring nut, round | $5.05 .800 .050 / 0100$ |
| Blanking cap complete with sealing disc and ring nut, square, alignable without gaps | $5.05 .800 .051 / 0100$ |

## RAFIX 16 F Blanking cap



## ACCESSORIES



## RAFIX 22 OR <br> Blanking cap, Ø 22.3 mm




Panel cut-out to IEC 60947-5-1

$\rightarrow$ Description $\quad$ Order no. $\quad 1$| $.05 .800 .065 / 0000$ |  |
| :--- | :--- |
| Blanking cap IP65, ring nut, square, slate grey | $5.05 .800 .064 / 0000$ |
| Blanking cap IP65, ring nut, round, slate grey |  |

Protection acc. to DIN EN 60529

## RAFIX 22 FS <br> Blanking cap, Ø 22.3 mm




Panel cut-out to IEC 60947-5-1

round, high version
square blanking cap

$\rightarrow$ Description $\quad$ Form | Overall height | Order no. |  |
| :--- | :--- | :--- |
| Blanking cap IP65, ring nut, round, slate gery, flat | round | flush |

## ACCESSORIES <br> TOOLS

## Fixing spanner

| $\rightarrow$ Fitting for | Order no. |
| :--- | :--- |
| M 8 | $5.58 .002 .027 / 7705$ |
| M 9, M 10 | $5.58 .002 .025 / 0105$ |
| M 11, M 13 | $5.58 .002 .026 / 0105$ |
| M 15, M 16 | $5.58 .002 .019 / 0105$ |
| M 18, M 19 | $5.58 .002 .017 / 0105$ |
| M 20, M 22 | $5.58 .002 .018 / 0105$ |
| M 25, M 30 | $5.58 .002 .020 / 0105$ |

## Fixing spanner for ring nut and front ring

| $\rightarrow$ Description | Fitting for | Order no. |
| :--- | :--- | :--- |
| Fixing spanner for ring nut | RAFIX 22 QR/FS | $5.05 .800 .062 / 0000$ |

## Fixing spanner for hexagon nut


$\rightarrow$ Fitting for

## Lamp extractor

| $\rightarrow$ Lamp diameter | Order no. |
| :--- | :--- |
| 4 mm | $1.90 .900 .001 / 0000$ |
| 4 mm | $1.90 .900 .002 / 0000$ |
| 5 mm | $1.90 .900 .003 / 0000$ |
| $5-6 \mathrm{~mm}$ | $1.90 .900 .004 / 0000$ |
| 7 mm | $1.90 .900 .005 / 0000$ |
| 10.4 mm | $1.90 .900 .006 / 0000$ |
| 11 mm | $1.90 .900 .007 / 0000$ |
| 14 mm | $1.90 .900 .008 / 0000$ |
| $16-17 \mathrm{~mm}$ | $1.90 .900 .009 / 0000$ |

TOOLS

## Disassembly tool

| $\rightarrow$ Fitting for | Order no. |
| :--- | :--- |
| LUMOTAST FK | $5.05 .800 .041 / 0000$ |
| LUMOTAST 25, RAFIX 16 | $5.05 .800 .042 / 0000$ |

## Female quick-connect terminal DIN 46340-B 2.8-1-MS

$\rightarrow$ Description $\quad$ Order no.

With latching detent for mating with a multipole connector.

## Plug distributor

$\rightarrow$|  | Description |
| :--- | :--- |
|  | Order no. |
| Plug distributor | $5.37 .540 .029 / 6000$ |

## ACCESSORIES

CONNECTION
$\rightarrow$ Description

# ACCESSORIES <br> CONNECTION 

## LUMOTAST FK/25

Flat ribbon cable, 10 cm , with socket connector and AMP 4-pin male quick connector

## LUMOTAST 75 IP40 <br> Protective cap



$\rightarrow$| Description | Order no. |
| :--- | :--- |
| LUMOTAST 75 IP40 - Protective cap for $18 \times 24$ collar | $5.05 .800 .027 / 0000$ |
| LUMOTAST 75 IP40 - Protective cap for $18 \times 18$ collar | $5.05 .800 .030 / 0000$ |

## ACCESSORIES

PROTECTION \& SEALING


# LUMOTAST 75 IP40 <br> Sealing cap for protection class IP 65 

| Description | Order no. |
| :---: | :---: |
| LUMOTAST 75 IP40-Sealing cap for protection class IP65, for $18 \times 24$ collar | 5.05.200.008/0000 |
| LUMOTAST 75 IP40-Sealing cap for protection class IP 65, for $18 \times 18$ collar | 5.05.200.009/0000 |

# Signal lamp Ø 22.3 mm Sealing ring for IP 65 

$\rightarrow$ Description $\quad$ Order no. $\quad$| Sealing ring for IP65 | $5.30 .075 .010 / 0100$ |
| :--- | :--- |

## O-ring

$\rightarrow$ Description $\quad$ Order no. $\quad$| O-ring, black, for blocking the operating stroke | $5.30 .120 .009 / 0100$ |
| :--- | :--- |
| O-ring for keylock switch | $5.30 .120 .015 / 0100$ |
| O-ring, black, $17.0 \times 1.5$, for blocking RF 19 H keys | $5.30 .125 .003 / 0100$ |
| O-ring, black, $16.0 \times 1$, for blocking RF 19 H keys | $5.30 .125 .007 / 0100$ |

## Pushbuttons 16.2 mm <br> Protection against contact

$\rightarrow$ Description $\quad$ Order no. | Protection against contact to VBG 4 | $5.55 .101 .715 / 0200$ |
| :--- | :--- |

## Signal lamps <br> Protection against contact

$\rightarrow$| Description | Order no. |
| :--- | :--- |
| Protection against contact to VBG 4 | $5.50 .240 .063 / 0209$ |
| Protection against contact to VBG 5 | $5.50 .240 .065 / 0200$ |
|  |  |

## ACCESSORIES

SPACERS


## Spacers, round



| Length L | Color | Order no. |
| :---: | :---: | :---: |
| 3.50 mm | blue transparent | 5.30.759.023/0000 |
| 4.75 mm | blue transparent | 5.30.759.028/0000 |
| 5.25 mm | yellow orange transparent | 5.30.759.030/0000 |
| 4.50 mm | red | 5.30.759.027/0000 |
| 5.50 mm | yellow | 5.30.759.031/0000 |
| 4 mm | green | 5.30.759.025/0000 |
| 5.75 mm | green | 5.30.759.032/0000 |
| 6.2 mm | blue | 5.30.759.251/0000 |
| 4.25 mm | blue | 5.30.759.026/0000 |
| 6 mm | blue | 5.30.759.033/0000 |
| 5 mm | black | 5.30.759.029/0000 |
| 10.00 mm | black | 5.30.759.043/0104 |
| 6.25 mm | red | 5.30.759.034/0000 |
| 6.50 mm | blue transparent | 5.30.759.035/0000 |
| 6.75 mm | black | 5.30.759.036/0000 |
| 7 mm | yellow orange transparent | 5.30.759.037/0000 |
| 7.25 mm | yellow | 5.30.759.038/0000 |
| 7.50 mm | green | 5.30.759.039/0000 |
| 7.75 mm | blue | 5.30.759.040/0000 |
| 8 mm | red | 5.30.759.041/0000 |
| 8.25 mm | blue transparent | 5.30.759.042/0000 |

## Required spacer length

For keyboards: Overall height of key - front panel thickness - 0.5 mm (area embossing).
For RAFIX 22 FS: 9.25 mm - front panel thickness -thickness of overlay, if existing

## Spacers, triangular


triangular version

| Length L | Order no. |
| :---: | :---: |
| 2.50 mm | 5.30.759.094/0000 |
| 2.75 mm | 5.30.759.095/0000 |
| 3 mm | 5.30.759.096/0000 |
| 3.25 mm | 5.30.759.097/0000 |
| 3.50 mm | 5.30.759.098/0000 |
| 3.75 mm | 5.30.759.099/0000 |
| 4 mm | 5.30.759.100/0000 |
| 4.25 mm | 5.30.759.101/0000 |
| 4.50 mm | 5.30.759.102/0000 |
| 4.75 mm | 5.30.759.103/0000 |
| 5 mm | 5.30.759.104/0000 |
| 5.25 mm | 5.30.759.105/0000 |
| 5.50 mm | 5.30.759.106/0000 |
| 5.75 mm | 5.30.759.107/0000 |
| 6 mm | 5.30.759.108/0000 |
| 6.2 mm | 5.30.759.253/0000 |
| 10.00 mm | 5.30.759.124/0000 |
| 10.25 mm | 5.30.759.125/0000 |
| 6.25 mm | 5.30.759.109/0000 |
| 6.50 mm | 5.30.759.110/0000 |
| 6.75 mm | 5.30.759.111/0000 |
| 7 mm | 5.30.759.112/0000 |
| 7.25 mm | 5.30.759.113/0000 |
| 7.50 mm | 5.30.759.114/0000 |
| 7.75 mm | 5.30.759.115/0000 |
| 8 mm | 5.30.759.116/0000 |
| 8.25 mm | 5.30.759.117/0000 |
| 9 mm | 5.30.759.254/0000 |

## ACCESSORIES

## SPACERS

- Table (continued) -

Spacers, triangular
Required spacer length $=$ Overall height of key - front panel thickness -0.5 mm (area embossing).

## RK 90

Spacer M 4

$\rightarrow$ Length L $\quad$ Color | Order no. |
| :---: |
| 12.5 mm overall height for RF 15 mm |
| 9.25 mm overall height, for RF 15 mm |
| 5.5 mm overall height, for RF15 N mm |
| 7.5 mm overall height for RACON $8 / 12 \mathrm{~mm}$ |
| 4.25 mm overall height, for RACON $8 / 12 \mathrm{~mm}$ |

Mounting from front (1 pc. per stud)

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[^0]:    Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about $40 \%$.
    The lamps up to 30 V are provided with glass sockets, the other ones with plastic sockets.

[^1]:    Accessoires:
    Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

