

Series 10

Characteristics

The Series 10 are LEDs for use with all EAO's illuminated switches (as accessories).

The following pages show a representative selection of LEDs.



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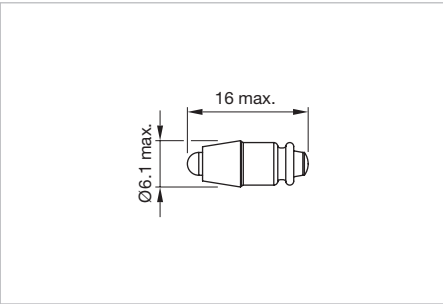
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LED T1 3/4 MG



Product can differ from the current configuration.



Dimensions [mm]

Additional Information

- A suitable lamp remover Part No. 61-9740.0 (Series Swisstac Part No. 300-0002-00)
- When using AC/DC types with AC operation, slight flickering can occur
- Luminous intensity data of the LEDs on direct voltage
- Electrical and optical data are measured at 25 °C
- If the 24VDC Bi-colour lamp is driven with normal polarity (plus on middle contact of the lamp) the first mentioned colour will light up, with inverted polarity the second colour will light up
- The specified versions are built with a protection diode (half wave rectifier) in series and the LED
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

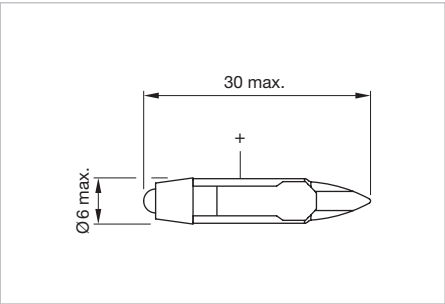
LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 Single-LED						
Single-LED red	6 VDC +10 %	15 mA ±15 %	350 mcd	630 nm	10-2J06.3142	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J09.1062	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J12.1062	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J13.1062	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	200 mcd	630 nm	10-2J19.1042	0.002 kg
Single-LED yellow	6 VDC +10 %	15 mA ±15 %	300 mcd	587 nm	10-2J06.3144	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J09.1064	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J12.1064	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J13.1064	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	180 mcd	587 nm	10-2J19.1044	0.002 kg
Single-LED green	6 VDC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2J06.3145	0.002 kg
	12 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J09.1065	0.002 kg
	24 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J12.1065	0.002 kg
	28 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J13.1065	0.002 kg
	48 VAC/DC +10 %	2/4 mA ±15 %	600 mcd	525 nm	10-2J19.1045	0.002 kg

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
Single-LED blue	6 VDC +10 %	15 mA $\pm$ 15 %	680 mcd	470 nm	10-2J06.3146	0.002 kg
	12 VAC/DC +10 %	7/14 mA $\pm$ 15 %	650 mcd	470 nm	10-2J09.1066	0.002 kg
	24 VAC/DC +10 %	7/14 mA $\pm$ 15 %	650 mcd	470 nm	10-2J12.1066	0.002 kg
	28 VAC/DC +10 %	7/14 mA $\pm$ 15 %	650 mcd	470 nm	10-2J13.1066	0.002 kg
	48 VAC/DC +10 %	4/8 mA $\pm$ 15 %	400 mcd	470 nm	10-2J19.1046	0.002 kg
Single-LED white	6 VDC +10 %	15 mA $\pm$ 15 %	750 mcd	x0.31/y0.32 nm	10-2J06.3149	0.002 kg
	12 VAC/DC +10 %	7/14 mA $\pm$ 15 %	700 mcd	x0.31/y0.32 nm	10-2J09.1069	0.002 kg
	24 VAC/DC +10 %	7/14 mA $\pm$ 15 %	700 mcd	x0.31/y0.32 nm	10-2J12.1069	0.002 kg
	28 VAC/DC +10 %	7/14 mA $\pm$ 15 %	700 mcd	x0.31/y0.32 nm	10-2J13.1069	0.002 kg
	48 VAC/DC +10 %	4/8 mA $\pm$ 15 %	400 mcd	x0.31/y0.32 nm	10-2J19.1049	0.002 kg
 Bi-colour LED						
Bi-colour LED red/green	24 VDC +10 %	15/14 mA $\pm$ 15 %	600/630 mcd	625/525 nm	10-A312.314A	0.002 kg

Single-LED T5.5



Product can differ from the current configuration.



Dimensions [mm]

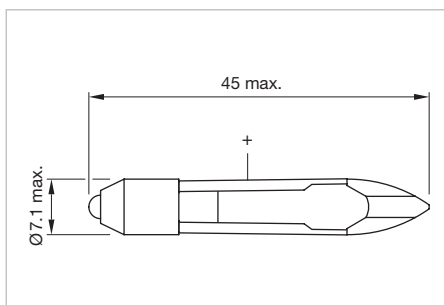
Additional Information

- A suitable LED remover Part No. 02-906 (Series Swisstac Part No. 300-0002-00)
- When fitting the LED elements pay attention to the polarity. An instruction can be found in the chapter «Application guidelines» of the corresponding series
- When using AC/DC types with AC operation, slight flickering can occur
- Electrical and optical data are measured at 25 °C
- Luminous intensity data of the LEDs on direct voltage
- The specified versions are built with a protection diode (half wave rectifier) in series and the LED
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 Single-LED						
Single-LED red	6 VDC +10 %	15 mA ±15 %	350 mcd	630 nm	10-2106.3142	0.001 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2109.1062	0.001 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2112.1062	0.001 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2113.1062	0.001 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	200 mcd	630 nm	10-2119.1042	0.001 kg
Single-LED yellow	6 VDC +10 %	15 mA ±15 %	300 mcd	587 nm	10-2106.3144	0.001 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2109.1064	0.001 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2112.1064	0.001 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2113.1064	0.001 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	180 mcd	587 nm	10-2119.1044	0.001 kg
Single-LED green	6 VDC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2106.3145	0.001 kg
	12 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2109.1065	0.001 kg
	24 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2112.1065	0.001 kg
	28 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2113.1065	0.001 kg
	48 VAC/DC +10 %	2/4 mA ±15 %	600 mcd	525 nm	10-2119.1045	0.001 kg

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
Single-LED blue	6 VDC +10 %	15 mA ±15 %	680 mcd	470 nm	10-2106.3146	0.001 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2109.1066	0.001 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2112.1066	0.001 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2113.1066	0.001 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	400 mcd	470 nm	10-2119.1046	0.001 kg
Single-LED white	6 VDC +10 %	15 mA ±15 %	750 mcd	x0.31/y0.32 nm	10-2106.3149	0.001 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2109.1069	0.001 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2112.1069	0.001 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2113.1069	0.001 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	400 mcd	x0.31/y0.32 nm	10-2119.1049	0.001 kg

Single-LED T6.8



Product can differ from the current configuration.

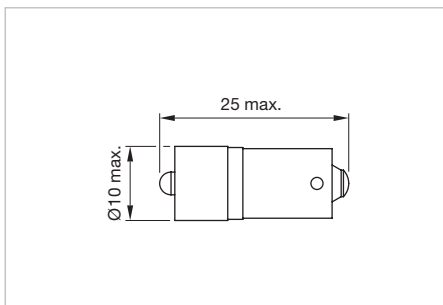
Dimensions [mm]

Additional Information

- A suitable LED remover Part No. 03-996
- When fitting the LED elements pay attention to the polarity. An instruction can be found in the chapter «Application guidelines» of the corresponding series
- When using AC/DC types with AC operation, slight flickering can occur
- Luminous intensity data of the LEDs on direct voltage
- Electrical and optical data are measured at 25 °C
- The specified versions are built with a protection diode (half wave rectifier) in series and the LED
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 Single-LED						
Single-LED red	6 VDC +10 %	17 mA ±15 %	400 mcd	630 nm	10-2K06.3152	0.002 kg
	12 VAC/DC +10 %	9/17 mA ±15 %	400 mcd	630 nm	10-2K09.1072	0.002 kg
	24 VAC/DC +10 %	9/17 mA ±15 %	400 mcd	630 nm	10-2K12.1072	0.002 kg
	28 VAC/DC +10 %	9/17 mA ±15 %	400 mcd	630 nm	10-2K13.1072	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	200 mcd	630 nm	10-2K19.1052	0.002 kg
Single-LED yellow	6 VDC +10 %	17 mA ±15 %	340 mcd	340 nm	10-2K06.3154	0.002 kg
	12 VAC/DC +10 %	9/17 mA ±15 %	340 mcd	340 nm	10-2K09.1074	0.002 kg
	24 VAC/DC +10 %	9/17 mA ±15 %	340 mcd	340 nm	10-2K12.1074	0.002 kg
	28 VAC/DC +10 %	9/17 mA ±15 %	340 mcd	340 nm	10-2K13.1074	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	180 mcd	340 nm	10-2K19.1054	0.002 kg
Single-LED green	6 VDC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2K06.3155	0.002 kg
	12 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2K09.1075	0.002 kg
	24 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2K12.1075	0.002 kg
	28 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2K13.1075	0.002 kg
	48 VAC/DC +10 %	2/4 mA ±15 %	600 mcd	525 nm	10-2K19.1055	0.002 kg

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
Single-LED blue	6 VDC +10 %	17 mA $\pm$ 15 %	780 mcd	470 nm	10-2K06.3156	0.002 kg
	12 VAC/DC +10 %	9/17 mA $\pm$ 15 %	780 mcd	470 nm	10-2K09.1076	0.002 kg
	24 VAC/DC +10 %	9/17 mA $\pm$ 15 %	780 mcd	470 nm	10-2K12.1076	0.002 kg
	28 VAC/DC +10 %	9/17 mA $\pm$ 15 %	780 mcd	470 nm	10-2K13.1076	0.002 kg
	48 VAC/DC +10 %	4/8 mA $\pm$ 15 %	400 mcd	470 nm	10-2K19.1056	0.002 kg
Single-LED white	6 VDC +10 %	17 mA $\pm$ 15 %	850 mcd	x0.31/y0.32 nm	10-2K06.3159	0.002 kg
	12 VAC/DC +10 %	9/17 mA $\pm$ 15 %	850 mcd	x0.31/y0.32 nm	10-2K09.1079	0.002 kg
	24 VAC/DC +10 %	9/17 mA $\pm$ 15 %	850 mcd	x0.31/y0.32 nm	10-2K12.1079	0.002 kg
	28 VAC/DC +10 %	9/17 mA $\pm$ 15 %	850 mcd	x0.31/y0.32 nm	10-2K13.1079	0.002 kg
	48 VAC/DC +10 %	4/8 mA $\pm$ 15 %	400 mcd	x0.31/y0.32 nm	10-2K19.1059	0.002 kg



Product can differ from the current configuration.

Dimensions [mm]

Additional Information

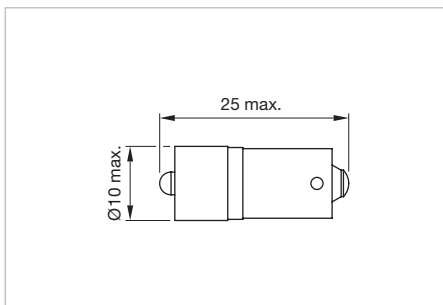
- A suitable LED remover Part No. 700.006.0 (Series 44 Part No. 44-935)
- Luminous intensity data of the LEDs on direct voltage
- Electrical and optical data are measured at 25 °C
- The specified 6 VDC, 24 VDC Bi-colour; 130 VAC, 130 DC und 230 VAC versions are built with a protection diode
- The specified 12, 24, 28, 48 VAC/DC versions are built with a bridge rectifier
- If the 24VDC Bi-colour lamp is driven with normal polarity (plus on middle contact of the lamp) the first mentioned colour will light up, with inverted polarity the second colour will light up
- The specified 130 VAC types are developed to run on a supply voltage of 130 VAC only. An operation at a higher supply voltage using commercial lampholders with integrated resistors, is not approved
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 Single-LED						
Single-LED red	6 VDC +10 %	17 mA ±15 %	400 mcd	630 nm	10-2506.1082	0.002 kg
	12 VAC/DC +10 %	16 mA ±15 %	390 mcd	630 nm	10-2509.1142	0.002 kg
	24 VAC/DC +10 %	15 mA ±15 %	350 mcd	630 nm	10-2512.1142	0.002 kg
	28 VAC/DC +10 %	13 mA ±15 %	300 mcd	630 nm	10-2513.1142	0.002 kg
	48 VAC/DC +10 %	8 mA ±15 %	200 mcd	630 nm	10-2519.1052	0.002 kg
	130 VDC +10 %	3 mA ±15 %	120 mcd	630 nm	10-2524.3042	0.002 kg
	130 VAC +10 %	5 mA ±15 %	180 mcd	630 nm	10-2H24.2052	0.002 kg
	230 VAC +10 %	3 mA ±15 %	120 mcd	630 nm	10-2H25.2042	0.002 kg
Single-LED yellow	6 VDC +10 %	17 mA ±15 %	340 mcd	587 nm	10-2506.1084	0.002 kg
	12 VAC/DC +10 %	16 mA ±15 %	340 mcd	587 nm	10-2509.1144	0.002 kg
	24 VAC/DC +10 %	15 mA ±15 %	300 mcd	587 nm	10-2512.1144	0.002 kg
	28 VAC/DC +10 %	13 mA ±15 %	270 mcd	587 nm	10-2513.1144	0.002 kg
	48 VAC/DC +10 %	8 mA ±15 %	180 mcd	587 nm	10-2519.1054	0.002 kg
	130 VDC +10 %	3 mA ±15 %	110 mcd	587 nm	10-2524.3044	0.002 kg

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
Single-LED yellow	130 VAC +10 %	5 mA ±15 %	160 mcd	587 nm	10-2H24.2054	0.002 kg
	230 VAC +10 %	3 mA ±15 %	110 mcd	587 nm	10-2H25.2044	0.002 kg
Single-LED green	6 VDC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2506.1085	0.002 kg
	12 VAC/DC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2509.1145	0.002 kg
	24 VAC/DC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2512.1145	0.002 kg
	28 VAC/DC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2513.1145	0.002 kg
	48 VAC/DC +10 %	4 mA ±15 %	600 mcd	525 nm	10-2519.1055	0.002 kg
	130 VDC +10 %	2 mA ±15 %	300 mcd	525 nm	10-2524.3045	0.002 kg
	130 VAC +10 %	3 mA ±15 %	450 mcd	525 nm	10-2H24.2055	0.002 kg
	230 VAC +10 %	2 mA ±15 %	300 mcd	525 nm	10-2H25.2045	0.002 kg
Single-LED blue	6 VDC +10 %	17 mA ±15 %	780 mcd	470 nm	10-2506.1086	0.002 kg
	12 VAC/DC +10 %	16 mA ±15 %	720 mcd	470 nm	10-2509.1146	0.002 kg
	24 VAC/DC +10 %	15 mA ±15 %	680 mcd	470 nm	10-2512.1146	0.002 kg
	28 VAC/DC +10 %	13 mA ±15 %	590 mcd	470 nm	10-2513.1146	0.002 kg
	48 VAC/DC +10 %	8 mA ±15 %	400 mcd	470 nm	10-2519.1056	0.002 kg
	130 VDC +10 %	3 mA ±15 %	200 mcd	470 nm	10-2524.3046	0.002 kg
	130 VAC +10 %	5 mA ±15 %	230 mcd	470 nm	10-2H24.2056	0.002 kg
	230 VAC +10 %	3 mA ±15 %	200 mcd	470 nm	10-2H25.2046	0.002 kg
Single-LED white	6 VDC +10 %	17 mA ±15 %	850 mcd	x0.31/y0.32 nm	10-2506.1089	0.002 kg
	12 VAC/DC +10 %	16 mA ±15 %	800 mcd	x0.31/y0.32 nm	10-2509.1149	0.002 kg
	24 VAC/DC +10 %	15 mA ±15 %	750 mcd	x0.31/y0.32 nm	10-2512.1149	0.002 kg
	28 VAC/DC +10 %	13 mA ±15 %	650 mcd	x0.31/y0.32 nm	10-2513.1149	0.002 kg
	48 VAC/DC +10 %	8 mA ±15 %	400 mcd	x0.31/y0.32 nm	10-2519.1059	0.002 kg
	130 VDC +10 %	3 mA ±15 %	150 mcd	x0.31/y0.32 nm	10-2524.3049	0.002 kg
	130 VAC +10 %	5 mA ±15 %	250 mcd	x0.31/y0.32 nm	10-2H24.2059	0.002 kg
	230 VAC +10 %	3 mA ±15 %	150 mcd	x0.31/y0.32 nm	10-2H25.2049	0.002 kg
 Bi-colour LED						
Bi-colour LED red/green	24 VDC +10 %	15 mA ±15 %	1200/900 mcd	625/525 nm	10-2H12.314A	0.002 kg
Bi-colour LED red/yellow	24 VDC +10 %	15 mA ±15 %	1200/550 mcd	625/589 nm	10-2H12.314B	0.002 kg
Bi-colour LED yellow/green	24 VDC +10 %	15 mA ±15 %	900/550 mcd	525/589 nm	10-2H12.314C	0.002 kg

10 Illumination

LED BA9s Fail Safe



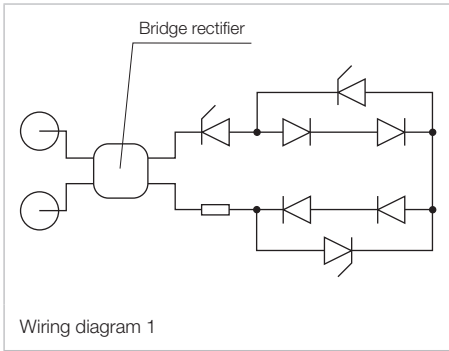
Product can differ from the current configuration.

Dimensions [mm]

Additional Information

- A suitable LED remover Part No. 700.006.0 (Series 44 Part No. 44-935)
- Luminous intensity data of the LEDs on direct voltage
- Electrical and optical data are measured at 25 °C
- The specified 72 and 110 VAC/VDC versions are built with a protection diode
- Specified 72 and 110 VAC/VDC versions are built with a bridge rectifier
- In case one LED fails, the other pair of still functioning LED-s is working. The light output then is half in order to indicate the malfunction and shows this way the need for replacement
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Wiring diagram	Weight
 Multi-LED Fail Safe							
Multi-LED rot	72 VDC +10 %	2.2 mA ±15 %	4 x 190 mcd	625 nm	10-4H21.1032P	1	0.002 kg
	110 VDC +10 %	2 mA ±15 %	4 x 170 mcd	625 nm	10-4H22.1032P	1	0.002 kg
Multi-LED yellow	72 VDC +10 %	2.2 mA ±15 %	4 x 190 mcd	589 nm	10-4H21.1034P	1	0.002 kg
	110 VDC +10 %	2 mA ±15 %	4 x 170 mcd	589 nm	10-4H22.1034P	1	0.002 kg
Multi-LED green	72 VDC +10 %	2.2 mA ±15 %	4 x 120 mcd	525 nm	10-4H21.1035P	1	0.002 kg
	110 VDC +10 %	2 mA ±15 %	4 x 170 mcd	525 nm	10-4H22.1035P	1	0.002 kg
Multi-LED blue	72 VDC +10 %	2.2 mA ±15 %	4 x 30 mcd	465 nm	10-4H21.1036P	1	0.002 kg
	110 VDC +10 %	2 mA ±15 %	4 x 25 mcd	465 nm	10-4H22.1036P	1	0.002 kg
Multi-LED white	72 VDC +10 %	2.2 mA ±15 %	4 x 160 mcd		10-4H21.1039P	1	0.002 kg
	110 VDC +10 %	2 mA ±15 %	4 x 145 mcd		10-4H22.1039P	1	0.002 kg



10 Accessories

Illumination

LED remover for T1 3/4 MG

Additional Information

▲ **Caution:** A switching process might be released when replacing the lamp

Product attribute	Part No.	Weight
 LED remover		
	für series 22, 31, 41, 51, 61, 71	61-9740.0 0.003 kg
	for series Swisstac	300-0002-00 0.003 kg

LED remover for T5.5

Additional Information

▲ **Caution:** A switching process might be released when replacing the lamp

Product attribute	Part No.	Weight
 LED remover		
	for series 01, 14	02-906 0.002 kg

LED remover for T6.8

Additional Information

▲ **Caution:** A switching process might be released when replacing the lamp

Product attribute	Part No.	Weight
 LED remover		
	for series 02, 03	03-996 0.027 kg

LED remover for BA9s

Additional Information

▲ **Caution:** A switching process might be released when replacing the lamp

Product attribute	Part No.	Weight
 LED remover		
	for series 04	700.006.0 0.003 kg
 LED remover		
	for series 44	44-935 0.037 kg

10 Technical data

Technical Data

Electrical characteristics

Operating voltage tolerance
+10 %

Mechanical characteristics

Standards

Lamp base

Base Standard

T1 3/4 MG DIN EN 60061-1: S5,7s

T5.5 DIN 49601

T6.8 DIN 49601

BA9s DIN EN 60061-1: BA9s

Environmental conditions

Storage temperature
-25 °C ... +80 °C

Service temperature
-20 °C ... +60 °C

EAO reserves the right to alter specifications without further notice.

LED used in

Series	Base T 1 3/4	T 5.5	T 6.8	BA9s
02			■	
03			■	
04				■
14		■		
22	■			
31	■			
44				■
51	■			
55 – Swisstac	■	■		
61	■			
71	■			

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10-2106.3144	6	10-2J12.1062	4
10-2106.3145	6	10-2J12.1064	4
10-2106.3146	7	10-2J12.1065	4
10-2106.3149	7	10-2J12.1066	5
10-2109.1062	6	10-2J12.1069	5
10-2109.1064	6	10-2J13.1062	4
10-2109.1065	6	10-2J13.1064	4
10-2109.1066	7	10-2J13.1065	4
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