

EMF 18 x 24



EMF 18 x 18



EMF Ø 18



1 pole



2 poles



3 poles



4 poles

General Description

EMF is a complete lighted pushbutton switches program for screw on panel mount (mounting hole diameter 16mm). Lenses are available in the dimensions rectangular 18 x 24 mm, square 18 x 18 mm and round diameter 18mm. The standard design protects the front of the switches against accidental operation. Gold plated contacts are standard. The pushbutton switches are equipped with a snap action element and 1-4 contact blocks. Each contact block can be used as N.C. or N.O. or change-over contact (for change-over contact external connection between terminals 2 and 4). Contacts in one section must be same polarity. EMF lighted pushbutton switches can be fitted with contactless elements by request.

Separation of the individual switching elements by contactless units permits high and low voltages to be applied to the same pushbutton switch. The 4 triplated terminals of each block are absolutely flux proof. The lenses of EMF are available in 11 different colors and can be lighted by Midget-Groove T1-3/4 incandescent lamps or LED. The switch positions of the alternate version of the pushbutton switches is always indicated by the position of lens.

AF indicator

The front dimensions and accessories such as lenses, legend plate inserts, incandescent lamps and LED's for AF indicators are identical to those for EMF lighted pushbutton switches.



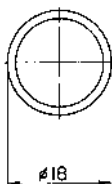
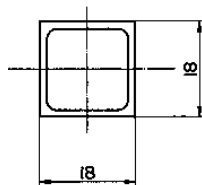
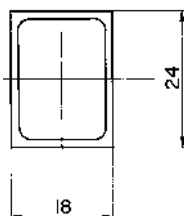
AF

Technical data of illuminated pushbutton switches EMF (* for EMF and indicators AF)

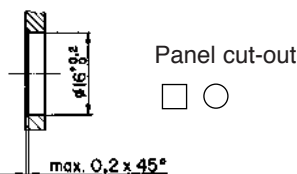
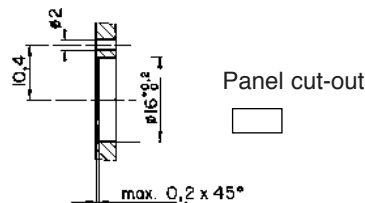
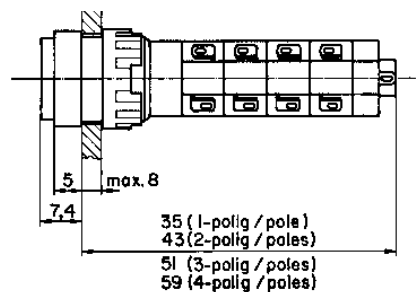
Switch system	Each contact block has one double break, snap acting switching mechanism	
Switch mode	Momentary or alternate action, 1-4 poles	
Contact material	Silver/nickel gold-plated (hard-gold)	
Operating travel	3.2 mm	
Actuating force	> 1.5 N	
Initial contact resistance (new)	< 10 mΩ Current 1 A AC, according to IEC 60341-1, Test i, silver contact	
Breaking capacity (at ohmic load)	250V/5A AC 250V/0.2 A DC	
Mechanical lifetime	> 2 x 10 ⁶ Operations	
Electrical lifetime (at ohmic load)	5 A/250 V AC > 50,000 Operations 4 A/250 V AC > 60,000 Operations 2 A/250 V AC > 200,000 Operations 1 A/250 V AC > 400,000 Operations	
* Storage temperature	EMF: -40° C to + 85° C; AF: -55° C to + 100° C	
* Operating temperature	EMF: -40° C to + 55° C with incandescent lamp; AF: -25° C to + 85° C -40° C to + 85° C without incandescent lamp	
* Vibration resistance	IEC 6068-2-6 Test Fc	
* Insulation resistance	> 10 ⁴ MΩ 500 V DC according to IEC 60341-1	
* Test voltage	> 4000 V, 50 Hz, 1 min. between metal plate and terminals	
* Protection class	Suitable for mounting in equipment with protection class II, in accordance to IEC 60536	
* Degree of protection	IP 40, IEC 60529 mounted from the front side; IP 67 (with splash guard)	
* Climate category	GVF with lamp, GPF without lamp according to DIN 40040	
* Terminals	Max. diameter of wire 2 x 0.8 mm; Max. diameter of stranded cable 0.75 mm ²	
* Solderability	350° C, 2 s, IEC 6068-2-20, Test Ta, method 2	
* Soldering heat resistance	350° C, 10 s, IEC 6068-2-20, Test Tb, method 2	
* Materials	Temperature resistant thermoplastic; Current carrying parts Cu alloy; Contact housing molded in electrical high-grade thermosetting plastic	
* Max. torque of nut	max 1.2 Nm	
* Approvals	UL recognized at 5 A/250V (File #E E172884) SEMKO approved at 5 A/250 V CSA certified at 5 A/250V (File #LR 96746-2) VDE approved at 5 A/250V (expert report) SEV approved at 5 A/250 V <small>with factory surveillance, VDE #93285 UG</small>	
* Standards	SEV 1005, VDE 0630, SEMKO 124, CSA C22.2/14, UL 508, CEE 24	

Models

Dimensions



See pg. 52 for technical data



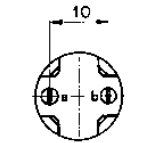
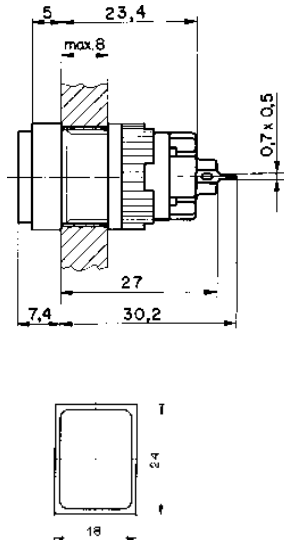
Ordering data for EMF body only (lenses, lamps, etc., accessories see pages 57-61)

Description	Type	Contact Diagram (button not depressed)	Length A (mm)	Order No. Shape of pushbutton		
Contacts in one section must be same polarity	lighted pushbutton, 1 pole, momentary action		35	0041.2301	0041.2311	0041.2321
	lighted pushbutton, 2 poles, momentary action		43	0041.2302	0041.2312	0041.2322
	lighted pushbutton, 3 poles, momentary action		51	0041.2303	0041.2313	0041.2323
	lighted pushbutton, 4 poles, momentary action		59	0041.2304	0041.2314	0041.2324
	lighted pushbutton, 1 pole, alternate action		35	0041.2351	0041.2361	0041.2371
	lighted pushbutton, 2 poles, alternate action		43	0041.2352	0041.2362	0041.2372
	lighted pushbutton, 3 poles, alternate action		51	0041.2353	0041.2363	0041.2373
	lighted pushbutton, 4 poles, alternate action		59	0041.2354	0041.2364	0041.2374

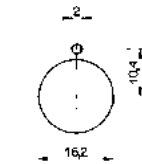
Models

Dimensions

Part Number



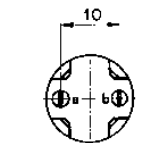
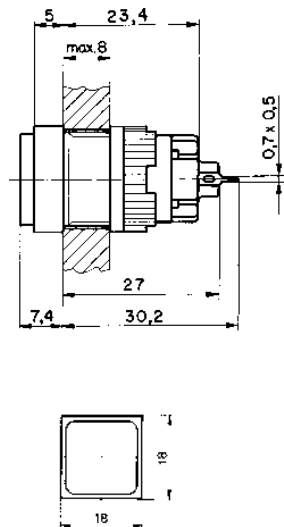
Terminals



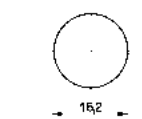
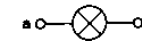
AF 0035.5501
18 x 24mm

Accessories (lamps, lenses etc.) must be ordered separately.

Accessories, see pages 57-61
Technical data, see page 52



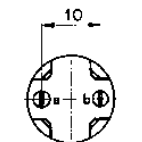
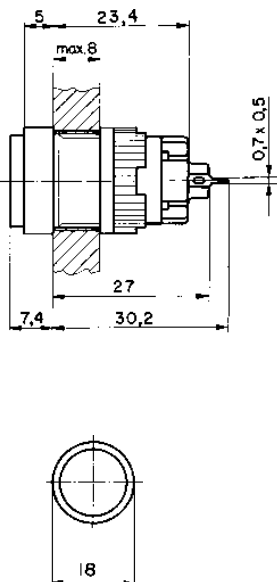
Terminals



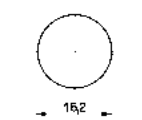
AF 0035.5511
18 x 18 mm

Accessories (lamps, lenses etc.) must be ordered separately.

Accessories, see pages 57-61
Technical data, see page 52



Terminals



AF 0035.5521
Ø 18 mm

Accessories (lamps, lenses etc.) must be ordered separately.

Accessories, see pages 57-61
Technical data, see page 52

Models

Part Numbers

Lenses



Color



	18 x 24	18 x 18	Ø 18
clear glass	0854.0581	0854.0601	0854.0621
clear red	0854.0582	0854.0602	0854.0622
clear green	0854.0583	0854.0603	0854.0623
clear yellow	0854.0584	0854.0604	0854.0624
clear blue	0854.0585	0854.0605	0854.0625
pearl	0854.0591	0854.0611	0854.0631
diffused red	0854.0592	0854.0612	0854.0632
diffused green	0854.0593	0854.0613	0854.0633
diffused yellow	0854.0594	0854.0614	0854.0634
diffused blue*	0854.0595	0854.0615	0854.0635
black*	0854.0596	0854.0616	0854.0636

*Not recommended for illuminated switches

Legend plate insert

The white/translucent legend plate with black inscriptions for use only with clear glass lenses

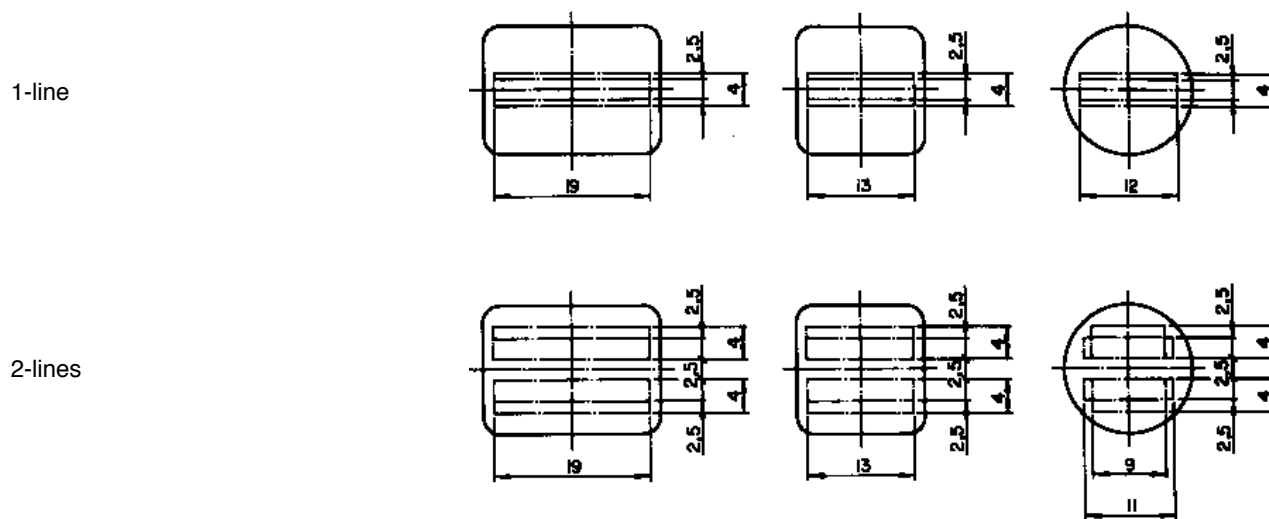
	18 x 24	18 x 18	Ø 18		18 x 24	18 x 18	Ø 18
	0854.0871	0854.0872	0854.0873		0854.1414	0854.1614	0854.1814
	0854.1402	0854.1602	0854.1802		0854.1415	0854.1615	0854.1815
	0854.1403	0854.1603	0854.1803		0854.1416	0854.1616	0854.1816
	0854.1404	0854.1604	0854.1804		0854.1417	0854.1617	0854.1817
	0854.1405	0854.1605	0854.1805		0854.1418	0854.1618	0854.1818
	0854.1406	0854.1606	0854.1806		0854.1419	0854.1619	0854.1819
	0854.1407	0854.1607	0854.1807		0854.1420	0854.1620	0854.1820
	0854.1408	0854.1608	0854.1808		0854.1421	0854.1621	0854.1821
	0854.1409	0854.1609	0854.1809		0854.1422	0854.1622	0854.1822
	0854.1410	0854.1610	0854.1810		0854.1423	0854.1623	0854.1823
	0854.1411	0854.1611	0854.1811				
	0854.1412	0854.1612	0854.1812				
	0854.1413	0854.1613	0854.1813				

Other legends available on request.

EMF/AF/SBE ACCESSORIES - MARKING OF LENSES AND LEGEND PLATES

Process	Hot stamping on lens or legend plate insert
Type face	DIN 1451 Medium
Color of lettering	Black or whiteblack or white Red, blue and black lenses are hot stamped with white color, other colors and legend plate inserts black
Type height	By choice 2.5 or 4mm
Special types, colors and type faces on request	

Max. surface for legend plate inserts (Type 0854.0871/72/73, Order no. see page 57)



Max. surface for legend plate inserts (Type 0854.0871/72/73, Order no. see page 57)



Order-Example

1. Shape and color of lens or legend plate insert
2. Type height
3. Legend - Line 1...
- Line 2...

Legend film insertion is possible instead of hot stamped

Calculation of max. legend length see page 59

EMF/AF/SBE - Max. legend length for lenses and legend plate inserts

Characters	Width of characters if type height is 2.5 mm	Width of characters if type height is 4 mm	Characters	Width of characters if type height is 2.5 mm	Width of characters if type height is 4 mm
a	2,18	3,48	J	1,78	2,84
b	2,18	3,48	K	2,35	3,76
c	1,88	3,00	L	1,83	2,92
d	2,18	3,48	M	3,00	4,80
e	2,18	3,48	N	2,45	3,92
f	1,45	2,32	O	2,35	3,76
g	2,18	3,48	P	2,18	3,48
h	2,18	3,48	Q	2,35	3,76
i	0,95	1,52	R	2,35	3,76
j	1,00	1,60	S	2,18	3,48
k	2,18	3,48	T	1,78	2,84
l	1,00	1,60	U	2,35	3,76
m	3,23	5,16	V	2,05	3,28
n	2,18	3,48	W	3,08	4,92
o	2,18	3,48	X	2,05	3,28
p	2,18	3,48	Y	2,05	3,28
q	2,18	3,48	Z	2,05	3,28
r	1,53	2,44	Ö	2,35	3,76
s	1,88	3,00	Ä	2,33	3,72
t	1,45	2,32	Ü	2,35	3,76
u	2,18	3,48			
v	1,88	3,00			
w	3,00	4,80			
x	1,88	3,00	1	1,35	2,16
y	1,88	3,00	2	1,98	3,16
z	1,88	3,00	3	1,98	3,16
ö	2,18	3,48	4	1,98	3,16
ä	2,18	3,48	5	1,98	3,16
ü	2,18	3,48	6	1,98	3,16
			7	1,98	3,16
			8	1,98	3,16
			9	1,98	3,16
A	2,33	3,72	0	1,98	3,16
B	2,35	3,76	.	0,95	1,52
C	2,18	3,48	,	0,95	1,52
D	2,35	3,76	:	0,95	1,52
E	2,18	3,48	;	0,95	1,52
F	2,05	3,29	+	1,48	2,36
G	2,35	3,76	-	1,48	2,36
H	2,45	3,92	/	1,48	2,36
I	0,95	1,52	Spatie	1,25	2,00

General description, description of type, height, lenses, legend plate inserts and order-example see page 58

EMF/AF ACCESSORIES - Incandescent and neon lamps, LED's and mounting tools

Incandescent lamp T 1¼ midget groove

Order no.	Voltage	Consumption	Brightness	Lifetime	
				AC	DC
0913.4001	6.3 V	200 mA	.40 MSCP	50,000 h	25,000 h
0913.4002	14 V	80 mA	.20 MSCP	15,000 h	7,000 h
0913.4003	28 V	40 mA	.20 MSCP	10,000 h	5,000 h
0913.4004	48 V	25 mA	.20 MSCP	5,000 h	2,000 h
0913.4005	60 V	20 mA	.30 MSCP	1,000 h	1,000 h



Incandescent lamps with lower power consumption on request.

The use of incandescent lamps >60V is limited by different standards. Check with testing agency.

Series resistors for incandescent lamps and capacitors for the reduction of lamp voltage available on request.

Neon lamp T 1¼ Midget Groove (requires external resistor)

Base contact Note: certain safety agency limitations may apply.

Order no.	for 115 Vac, add	33KΩ \geq	¼ Watt
0923.3001	for 220 Vac, add	100KΩ \geq	¼ Watt

LED T 1¼ Midget Groove

Order no.	Color	Operating voltage	Reverse voltage	Operating current	Operating temperature	Storage temperature	Power dissipation	Peak wave	Reverse current	Luminous intensit
0925.0104	red	6	8	30			250	700	100	7
0925.0105	green	6	8	30			250	555	100	30
0925.0106	yellow	6	8	30			250	570	100	22
0925.0107	red	12	16	15	-25°C	-25°C	250	700	100	7
0925.0108	green	12	16	15	to	to	250	555	100	30
0925.0109	yellow	12	16	15	+70° C	+85° C	250	570	100	22
0925.0110	red	28	16	10			300	700	100	7
0925.0111	green	28	16	10			300	555	100	30
0925.0112	yellow	28	16	10			300	570	100	22



Base contact
= + polarity

Lamp extractor

Order no.
0853.0621



Mounting Key

Order no.
0853.0622



Protection shield against inadvertent operation (made of thermoplastic)

0886.0010 Single mounting			
0886.0011 In-line mounting			
0886.0012 Square			
0886.0013 Round			

Splash guards, 2 parts in PVC, square and rectangular, IP 64 (IEC 60529), lamp easily interchangeable from the front

0886.0001 Single mounting				
0886.0002 Rectangular				

Protection cap, to avoid faulty operation, square, rectangular, transparent, lockable using tamper-detection wire and lead seal

0886.0003 Square			0886.0004 Rectangular		
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Insulation boot, made of flexible plastic, (UL flame class 94 VO), easy mounting from back side

EMF		Boot 0859.0081	
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Blanking plate, black

0886.0005 (18 x 24mm)	0886.0006 (18 x 18mm)	0886.0007 (Ø 18mm)