

2 POLE SWITCH

MOMENTARY AND LATCHING FUNCTION

ADJUSTABLE TO MULTIMEC®CAP RANGE



unimec™ product range has low and high temperature switches and square-shaped cap solutions.

unimec™ switches have 8 contact function options making it very flexible and suitable for any application.

Redundancy coming from the number of poles makes it an excellent choice where safety is a concern.

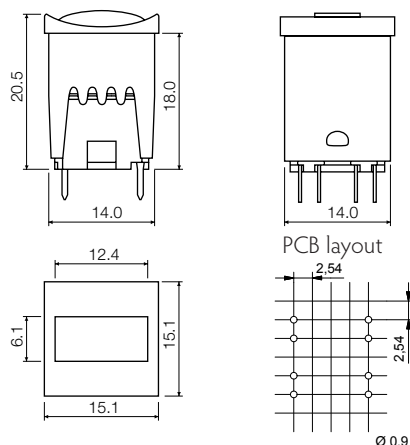


- Square solution
- 15.1mm x 15.1mm
- h=20.5 mm
- Material: ABS
- Temp. Range: -40/+65°C

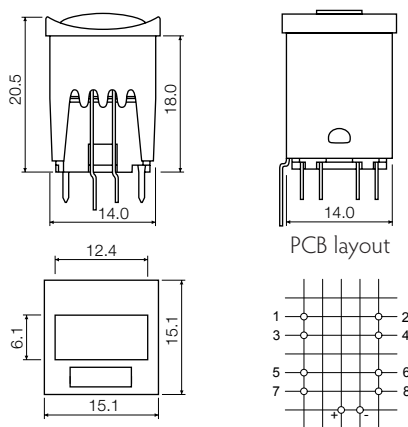
All dimensions in mm

DIMENSIONS

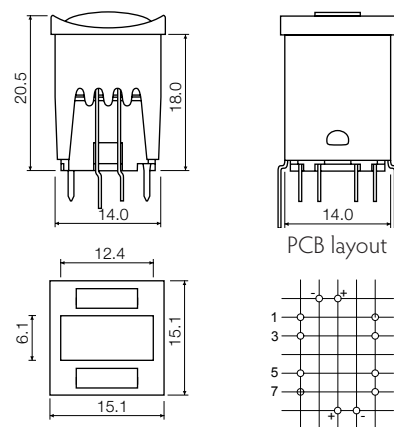
(TH) + 16324



(TH w/LED) + 16325



(TH 2 w/LED) + 16326



NON-ILLUMINATED - HOW TO ORDER

Switch

1 5

+

Extender

1 6 2 7 0

+

Cap

1 6 3 0 0

+

Bezel

1 6 3 2 4

15501 mom. silver

15551 alt. silver

15502 mom. gold

15552 alt. gold

15500 silent silver

15401 mom. silver high temp.

15402 mom. gold high temp.

15420 silent gold high temp.

15451 alt. silver high temp.



00 blue

01 brown

02 green

03 grey

04 yellow

05 golden

06 white



07 orange

08 red

09 black

30 ultra blue

40 dusty blue

42 aqua blue

32 mint green

33 tele grey

34 melon

38 noble red

50 metal dark blue

53 metal light grey

57 metal dark grey

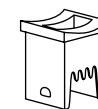
58 metal bordeaux

01 brown

03 grey

06 white

09 black



ILLUMINATED - HOW TO ORDER

Switch

1 5

+

Extender

1 6 2 7 0

+

Cap

1 6 3 0 0

+

Bezel

16325

+

Lens

1 6 3 2 7

+

LED

1 6 9 2 2



16325



02 green

04 yellow

08 red

01 brown

03 grey

06 white

09 black

16326



Lens 16327

2 required

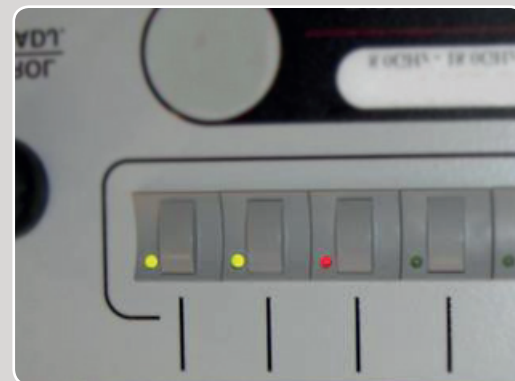


LED 16922

2 required



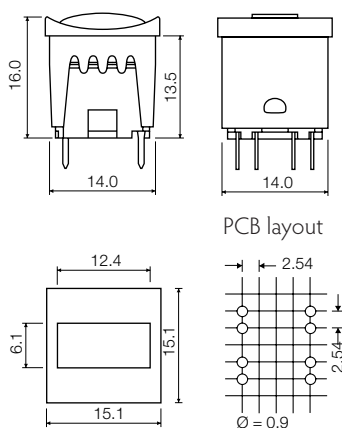
- Square solution
- 15.1mm x 15.1mm
- h=16.0 mm
- Material: ABS
- Temp. Range: -40/+65°C



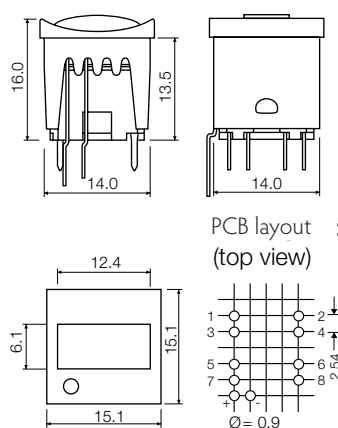
All dimensions in mm

DIMENSIONS

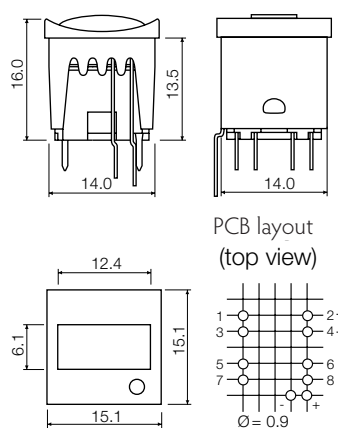
(TH) + 16310



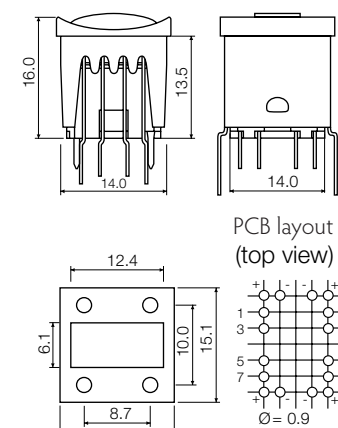
(TH w/LED) + 16311



(TH w/LED) + 16312



(TH w/4 LED) + 16315



NON-ILLUMINATED - HOW TO ORDER

Switch

1 5

15501 mom. silver
15551 alt. silver
15502 mom. gold
15552 alt. gold
15500 silent silver

15401 mom. silver *h.t.
15402 mom. gold *h.t.
15420 silent gold *h.t.
15451 alt. silver *h.t.
* High temp.



Cap

1 6 3 0 0

00 blue
01 brown
02 green
03 grey
04 yellow
05 golden
06 white
07 orange
08 red
09 black



Bezel

1 6 3 2 4

01 brown
03 grey
06 white
09 black



For 16300 and 16310 only

30 ultra blue
40 dusty blue
42 aqua blue
32 mint green
33 tele grey
34 melon
38 noble red
50 metal dark blue
53 metal light grey
57 metal dark grey
58 metal bordeaux

ILLUMINATED - HOW TO ORDER

Switch

1 5



Cap

1 6 3 0 0



Bezel

16311



16312



16314

16315



LED

1 6 9 2 1

02 green **04** yellow **08** red

1 6 9 2 0

02 green **04** yellow **08** red

LED **16920** 1 required LED **16921** 1 required

LED **16920** 2 required LED **16921** 2 required



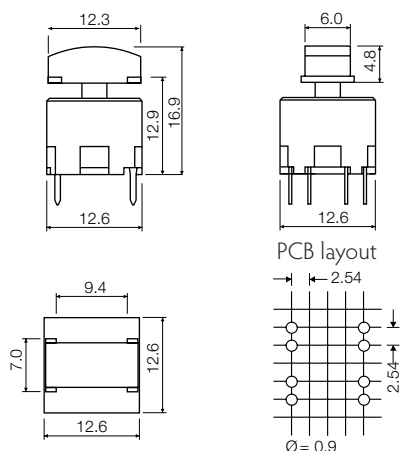


- Square and rectangular caps
- 6mm x 12.3mm; 14.9mm x 14.9mm; 15.1mm x 15.1mm
- h=16.9mm; 14.6mm; 14.5mm
- Material: ABS
- Temp. Range: -40/+65°C

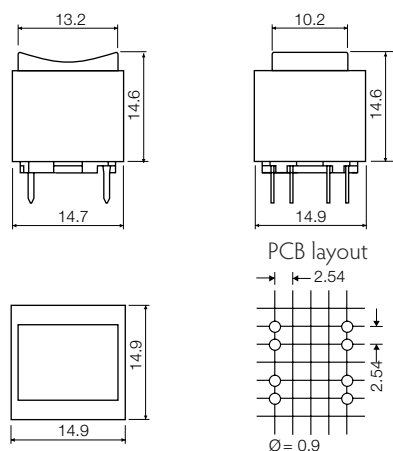
All dimensions in mm

DIMENSIONS

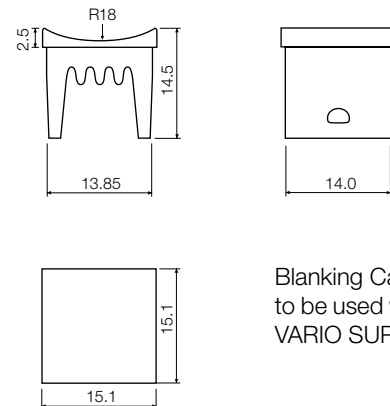
(TH) + 16300



(TH) + 16700



(TH) + 16800



Blanking Cap
to be used with
VARIO SUPPORT

NON-ILLUMINATED - HOW TO ORDER

Switch

1 5

15501 mom. silver
15551 alt. silver
15502 mom. gold
15552 alt. gold
15500 silent silver

15401 mom. silver *h.t.
15402 mom. gold *h.t.
15420 silent gold *h.t.
15451 alt. silver *h.t.
* High temp.

Cap and color code

+ 1 6 3 0 0



00 blue
01 brown
02 green
03 grey
04 yellow
05 golden
06 white

07 orange
08 red
09 black
30 ultra blue
40 dusty blue
42 aqua blue
32 mint green

33 tele grey
34 melon
38 noble red
50 metal dark blue
53 metal light grey
57 metal dark grey
58 metal bordeaux

Switch

1 5



+

Cap

1 6 7 0 0



00 blue
02 green
03 grey

04 yellow
06 white
08 red

09 black

Cap

1 6 8 0 0



00 blue
01 brown
02 green
03 grey
04 yellow

05 golden
06 white
07 orange
08 red
09 black

11 transparent
12 transparent green
14 transparent yellow
18 transparent red



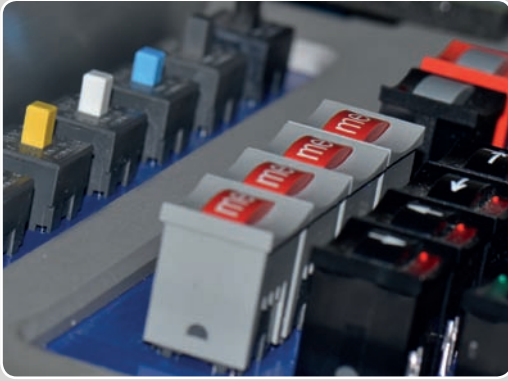
All standard legends are white on black caps.

The size of the legends listed may not correspond to the actual size. Please ask your local distributor, if you do not find what you need on the list. New legends may have been added after this catalogue was printed.

Custom legends and other colour combinations are available, please contact your local distributor.

Standard Keycap Legends

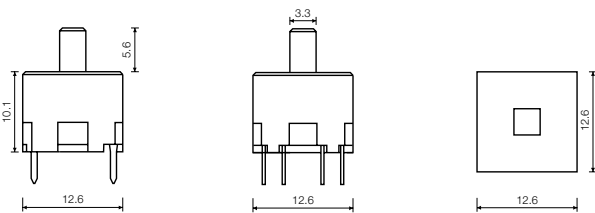
Part no.			Part no.			Part no.		
								
LEGEND	18_	18_	LEGEND	18_	18_	LEGEND	18_	18_
0	000	200	A	010	210	ON/OFF	017	217
1	001	201	B	011	211	STOP	018	218
2	002	202	C	012	212	START	031	231
3	003	203	D	013	213	CLEAR	036	236
4	004	204	E	014	214	LOAD	037	237
5	005	205	F	015	215	RESET	038	238
6	006	206	G	063	263	CR	043	243
7	007	207	H	064	264	MANUAL	044	244
8	008	208	I	065	265	END	047	247
9	009	209	J	066	266	CANCEL	048	248
10	020	220	K	067	267	CTRL	050	250
11	021	221	L	068	268	ESC	051	251
12	022	222	M	069	269	DSP	053	253
13	023	223	N	070	270	ENTER	105	305
14	024	224	P	072	272	SHIFT	106	306
15	025	225	S	075	275	ON	116	316
16	026	226	T	076	276	OFF	117	317
			U	077	277			
			V	078	278			
			W	079	279			
			#	107	207			
			*	019	219			
			☐	016	216			
			→	033	233			
			←	133	233			
			↑	034	234			
			↓	134	234			
			↶	135	235			
			↷	115	215			
			↔	041	241			
			+	054	254			
			—	059	259			
			•	056	256			
			:	055	255			



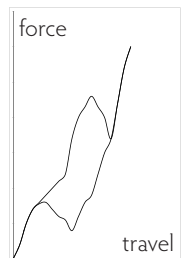
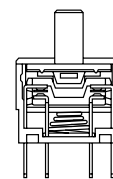
- Max. 250mA/120V/9W AC/6W DC
- 2 pole
- Momentary or latching
- 8 contact functions
- Temperature range:
Low temp: -40/+75°C
High temp: -40/+160°C
- Through-hole version (TH)

All dimensions in mm

DIMENSIONS THROUGH-HOLE

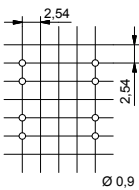


OPERATING FORCE (TYPICAL EXAMPLE)

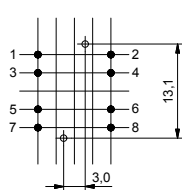


PCB MOUNTING HOLE DIMENSIONS

Basic switch

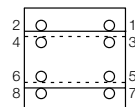


w/Extender 16250



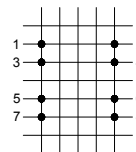
With LED
16923 and 16924

FUNCTIONAL DIAGRAM

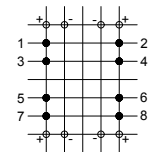


— up
-- down

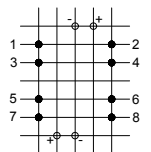
CIRCUIT DIAGRAM



Without LED



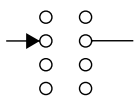
With round LED
16920 and 16921



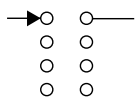
With rect. LED
16922

WIRING DIAGRAM

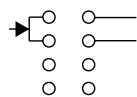
Select the contact function you require - and design your PC board accordingly



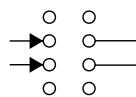
1 make
contact



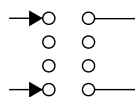
1 break
contact



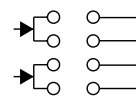
1 change over
contact



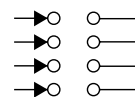
2 make
contact



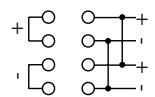
2 break
contact



2 change over
contact



2 make and
2 break



reverse
polarity

HOW TO ORDER

Part no:



Temperature:
5: low temp.
4: high temp.

Switch function:
0: momentary
5: alternate

Terminal
1: silver
2: gold
0: quiet version.

Low temp.



15.500



15.501



15.502



15.551



15.552

High temp.



15.420
H



15.401
E



15.402
F



15.451
I



15.452
J

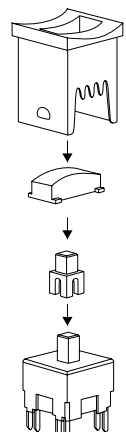
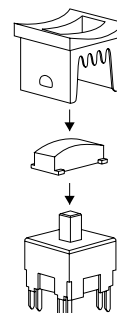
HOW TO ASSEMBLE

unimec™

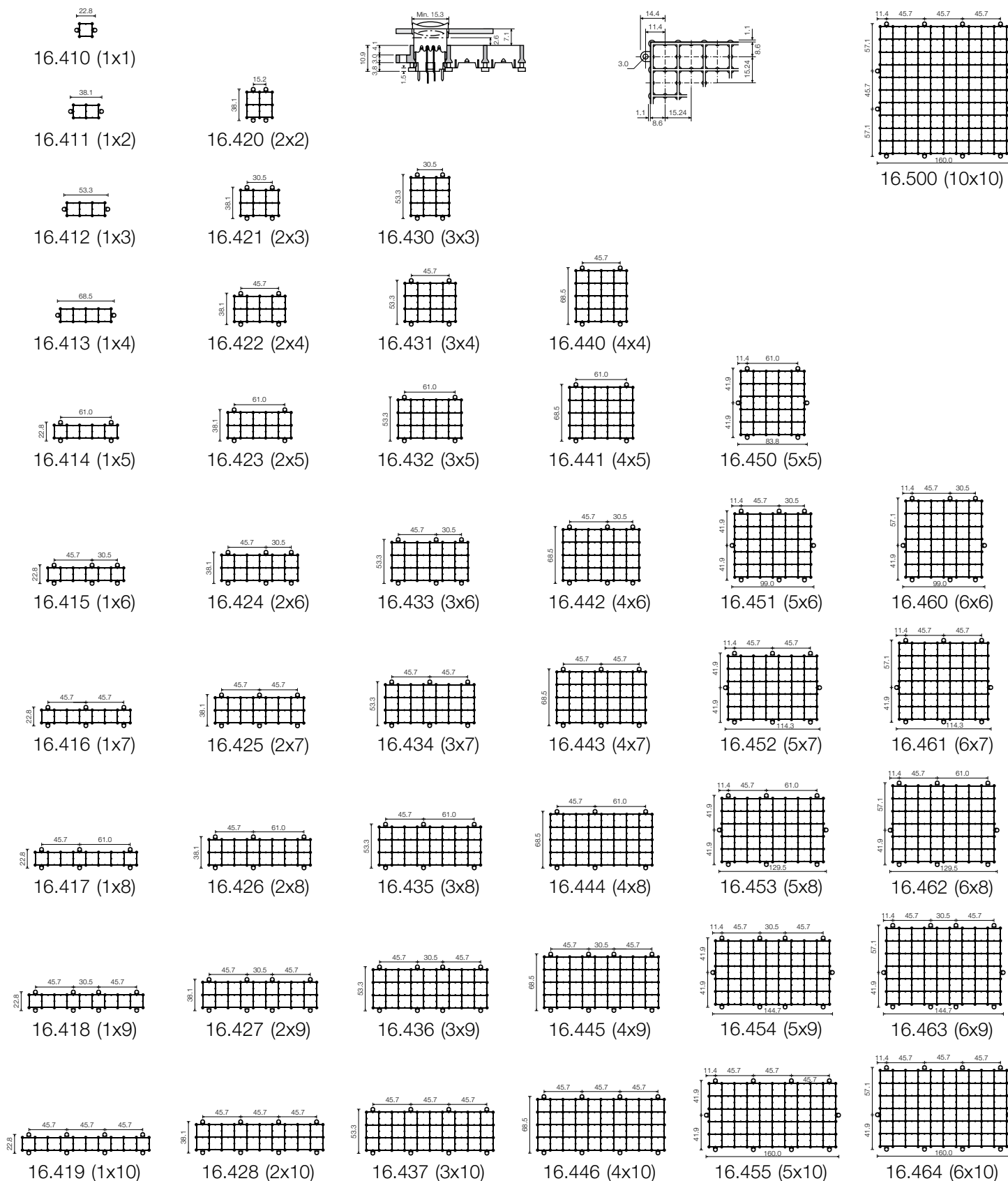
15XXX+16270
+16300 +16310

unimec™

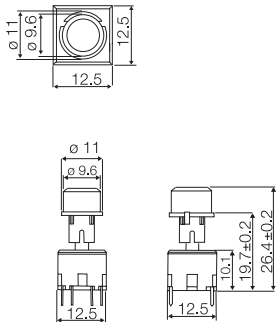
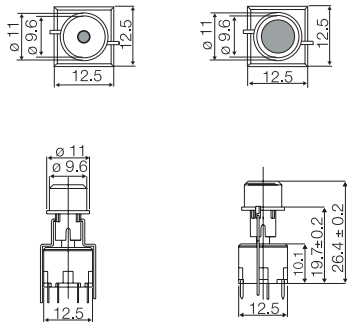
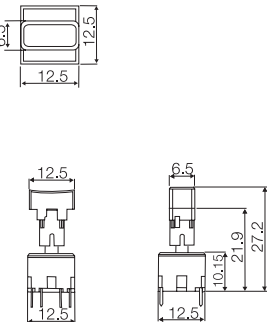
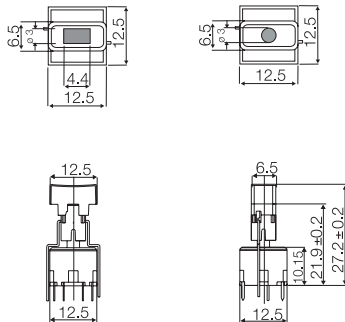
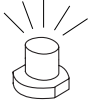
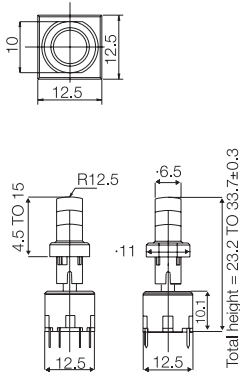
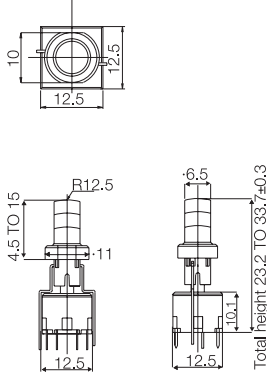
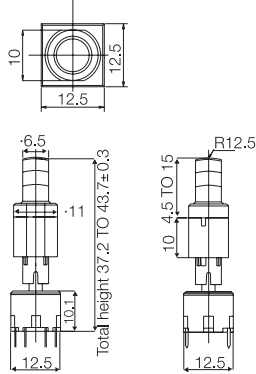
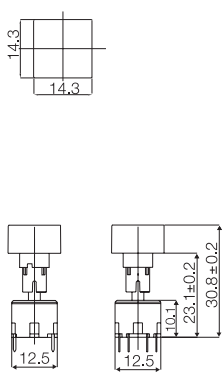
15XXX+16300
+16310



For all types of unimec™ switches with bezels - 16310 - 16315 and 16324 - 16326



Selection guide

 A 16250 extender is needed when mounting multimec® on unimec™ switches			
Cap 	 1E  1F	 1P	 1Q  1R
Dimensions 			
LED	16923XX 00 blue  20 green 40 yellow 65 white 80 red		16923XX 00 blue  20 green 40 yellow 65 white 80 red
Cap  1S	 1S illuminated	 1S + 2S	 1K  1K illuminated
Dimensions 			
LED	16923XX 00 blue  20 green 40 yellow 65 white 80 red	16923XX 00 blue  20 green 40 yellow 65 white 80 red	16924XX  23 green 45 yellow 88 red

For specific dimensions, color codes, how to order and other information please refer to the pages with the keycaps on multimec® switches. For technical information on the unimec™ basic switches please see technical specifications or go to our website www.mec.dk where you will find a page for each option. The multimec® keycaps 1N, 1T, 1U, 1V, 1WA, 1WD, 1WP and 1X can also be used on unimec™ switches. Please ask for technical drawings on dimensions.

RoHS Compatible

		RB Low Temperature Versions		RA High Temperature Versions	
		Silver	Gold	Silver	Gold
Electrical Specifications					
Contact resistance		Max. 100 m Ω (initially)		Max. 100 m Ω (initially)	
Insulation resistance		>10 M Ω		>10 M Ω	
Recommended load		Min. 0.5 mA	Min. 0.5μ A	Min. 0.5 mA	Min. 0.5μ A
		Max. 250 mA – 120 V – 9W AC – 6W DC		Max. 250 mA – 120 V – 9W AC – 6W DC	
Max. Current in non switching state		0.5 A		0.5 A	
Contact bounce		Max. 10 ms		Max. 10 ms	
Dielectric strength between adjacent contacts		1000 V for 2 min.		1000 V for 2 min.	
Insulation resistance between adjacent contacts		5 X 10 ¹³ Ω		5 X 10 ¹³ Ω	
Capacitance between adjacent contacts		0.5 pF		0.5 pF	
Mechanical Specifications					
Standard actuation force (switch)		Typ 2.5N		Typ 2.5N	
Max. Actuation force without cap		100N for 10 sec.		100N for 10 sec.	
Key travel (switch)		1.8 mm		1.8 mm	
Lifetime	Momentary	1.500.000 cycles		>10.000.000 cycles	
	Latching	500.000 cycles		5.000.000 cycles	
Temperature range					
Working temperature		Min. -40°C Max. +75°C		Min. -40°C Max. +160°C	
Storage temperature		Min. -65°C Mex. +85°C		Min. -65°C Mex. +160°C	
Soldering IEC 68-2-20		Wave – max 260°C for max. 10 sec., please refer to usage guidelines			
		Soldering iron – max. 350°C for max. 3 sec. Flux tight.			
Environmental Endurance IEC 68-2-3					
Temperature		+40°C		+40°C	
Humidity		93% RH		93% RH	
Duration		56 days		56 days	
Sealing IEC 529		IP-54		IP-54	
Cleaning		Standard methods such as water and soap (not immersed)			
Material Specifications – Switches					
Housing and actuator		Glass fiber filled Polycarbonate UL94V1		LCP UL94V0	
Switch spring		Stainless steel		Stainless steel	
Key spring		Stainless steel		Stainless steel	
Latch pin		Stainless steel		Stainless steel	
Fixed contact		SnCu+2μNi+3μAg	SnCu+2μNi+3μAu	SnCu+2μNi+3μAg	SnCu+2μNi+3μAu
Moving contact		Stainless steel +3μAg	Stainless steel +3μAg+1μAu	Stainless steel +3μAg	Stainless steel +3μAg+1μAu
Terminals		SnCu+2μNi+3μSn100		SnCu+2μNi+3μSn100	
Contact lubricant		Special protective lubricant Klüber Barrierta I EL Fluid		Special protective lubricant Klüber Barrierta I EL Fluid	
Material Specifications – All Caps & Bezels					
Temperature limit		Max. +65°C		Max. +65°C	
Tampon Printing		According to ISO Class: 1/ASTM Class:4B		According to ISO Class: 1/ASTM Class:4B	

unimec™ LEDs

Part Nos.		16920/16921			16922			16923					16924		
Colour (G=green, Y=yellow, R=red)		G	Y	R	G	Y	R	B	G	Y	W	R	G	Y	R
Colour Codes		02	04	08	02	04	08	00	20	40	65	80	23	45	88
Absolute Maximum Ratings (Ta=25°C)															
Power	mW	100	100	100	135	135	135	105	70	60	120	60	150	130	300
Current forward	mA	30	30	30	30	30	30	30	20	20	25	20	40	40	90
Forward peak current	mA	50	50	50	90	90	90	200	60**	60**	100	60**	500	500	1000
Voltage reverse	V	5	5	5	5	5	5	5	3	3	5	3	12	12	5
Operating temperature	°C	-25 - +100			-55 - +100			-25 - +85					-55 - +100		
Storage temperature	°C	-25 - +100			-55 - +100			-30 - +100					-55 - +100		
Soldering temperature	°C	+245 for max. 3 sec			+300 for max. 3 sec			+260 for max. 5 sec					+300 for max. 3 sec		
Electrical-Optical Characteristics (Ta=25°C)															
Voltage forward	Typ. V	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.1	2.1	3.8	2.0	2.1*	2.3***	2.4***
	Max. V	3.0	3.0	3.0	3.0	3.0	3.0	2.8	3.0	3.0	4.3	3.0	2.5*	2.5***	3.8***
Current reverse	µA	100	100	100	100	100	100	2	10	10	50	10	10	10	10
Wave length	nm	560	590	660	565	585	635	460	563	585	NA	650	570	587	635
Spread	Ønm	10	10	10	10	10	10	40	40	40	NA	40	25	45	45
Spread angle	Degree	20	20	20	45	45	45	20	45	45	25	45	80	90	55
Luminous Intensity	Min. mcd	1	1	0.8	1.5	2.5	2.5	20	9.0	5.6	630	5.6	71****	71****	100****
	Typ. mcd	2	3	1.6	2.5	3.0	5.0	25	25	16	1000	16	112****	112****	160****
Orientation		The longer pin is the anode, the shorter is the cathode.													

*F/20mA, **Pulse width 1ms Duty cycle 1:5, ***F=50mA, ****Luminous Flux mlm

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