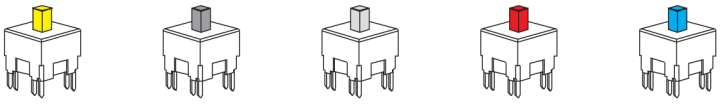
unimec™ basic switch modules

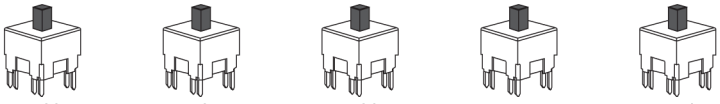
Basic module applies to all versions

Low temp.

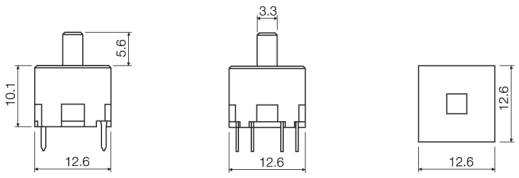


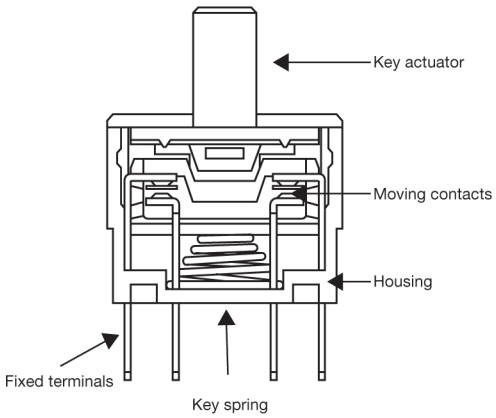
15.500 **15.501** **15.502** **15.551** **15.552**

High temp.



15.420 **H** **15.401** **E** **15.402** **F** **15.451** **I** **15.452** **J**





Part no:

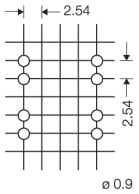
1	5			

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

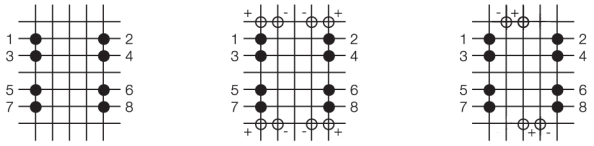
Switch function:
0: momentary
5: alternate

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

PCB Mounting Hole Dimensions Basic Switch



Circuit diagram (topview)

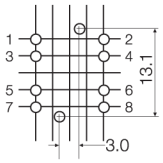


Without LED

With round LED 16920 and 16921

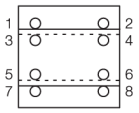
With rect. LED 16922

PCB Mounting Hole Dimensions (w/Extender 16250)



With LED 16923 and 16924

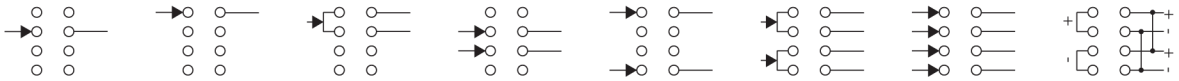
Functional diagram



—— up
---- down

Wiring Diagram

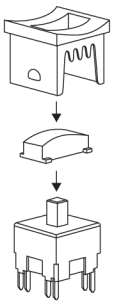
Select the contact function you desire - and design your PC board accordingly



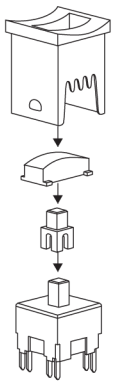
1 make contact | 1 break contact | 1 change over contact | 2 make contacts | 2 break contacts | 2 change over contacts | 2 make and 2 break | reverse polarity

How to assemble

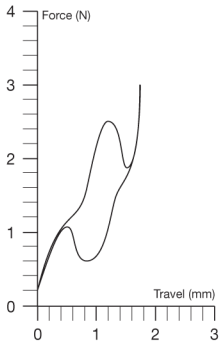
unimec™
15XXX + 16300 + 16310



unimec™
15XXX + 16270 + 16300 + 16324



Operating Force
(Typical example)

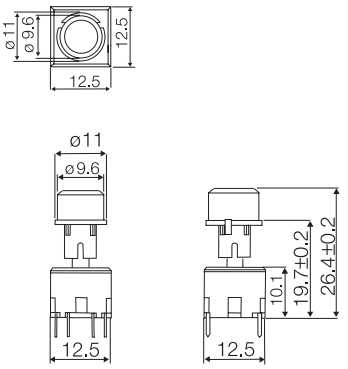
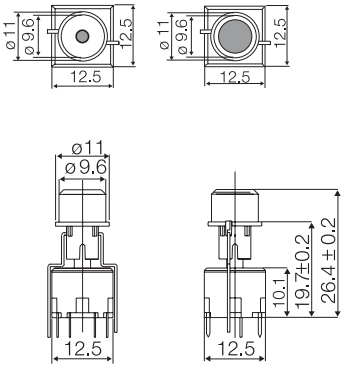
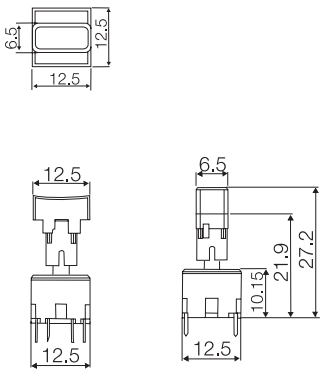
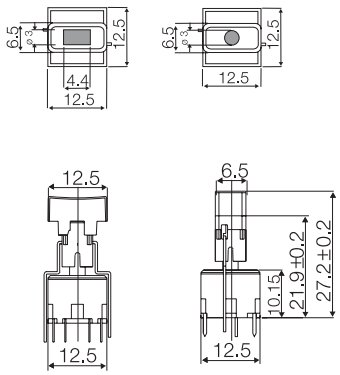
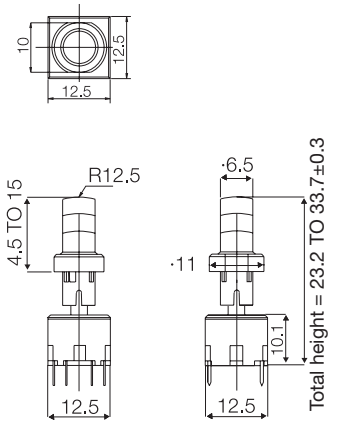
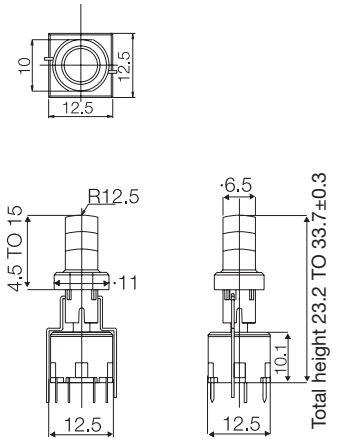
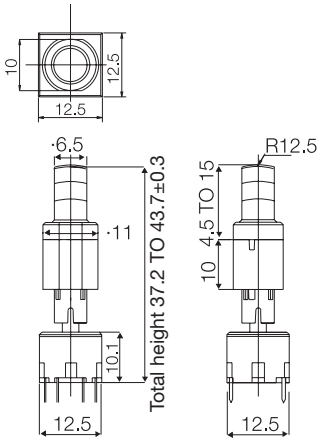
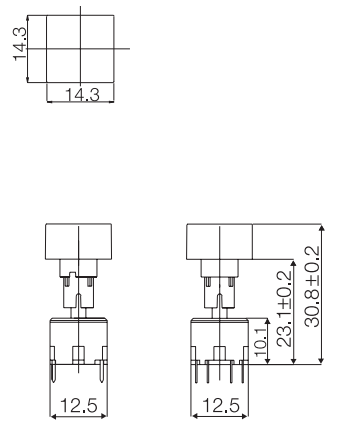


For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ switches with multimec® keycaps

Selection guide

A 16250 extender is needed when mounting multimec® keycaps on unimec™ switches

Cap	1D	1E 1F	1P	1Q 1R
Dimensions				
LED		**16923XX** **00** blue **20** green **40** yellow **80** red		**16923XX** **00** blue **20** green **40** yellow **80** red
Cap	1S	1S illuminated	1S + 2S	1K 1K illuminated
Dimensions				
LED		**16923XX** **00** blue **20** green **40** yellow **80** red	**16923XX** **00** blue **20** green **40** yellow **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.

For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ technical specifications

RoHS Compatible

	RB Low Temperature Versions Silver	RB Low Temperature Versions Gold	RA High Temperature Versions Silver	RA High Temperature Versions 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	
Life time	Momentary 1.500.000 cycles		Momentary >10.000.000 cycles	
	Alternate 500.000 cycles		Alternate 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 Max. +85°C		Min. -65°C Max. +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)		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	ABS (standard) UL94HB		ABS (standard) UL94HB	
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**	**G**	**Y**	**R**	**G**	**Y**	**R**
Colur Codes		02	04	08	02	04	08	20	40	80	23	45	88
Absolute Maximum Ratings	(Ta=25°C)												
Power	mW	100	100	100	135	135	135	70	60	60	150	130	300
Current forward	mA	30	30	30	30	30	30	20	20	20	40	40	90
Forward peak current	mA	50	50	50	90	90	90	60**	60**	60**	500	500	1000
Voltage reverse	V	5	5	5	5	5	5	3	3	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	2.0	2.1*	2.3***	2.4***
	Max. V	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5*	2.5***	3.8***
Current reverse	µA	100	100	100	100	100	100	10	10	10	10	10	10
Wave length	nm	560	590	660	565	585	635	563	585	650	570	587	635
Spread	Ønm	10	10	10	10	10	10	40	40	40	25	45	45
Spread angle	degree	20	20	20	45	45	45	45	45	45	80	90	55
Luminous Intensity	Min. mcd	1	1	0.8	1.5	2.5	2.5	9.0	5.6	5.6	71****	71****	100****
	Typ. mcd	2	3	1.6	2.5	3.0	5.0	25	16	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

Specifications are subject to change without notice.

For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ Vario Support

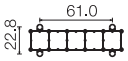
For all types of UNIMEC™ switches with bezels - 16310 - 16315 and 16324 - 16326

16.410 (1x1)

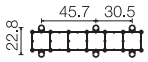
16.411 (1x2)

16.412 (1x3)

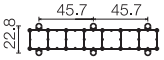
16.413 (1x4)



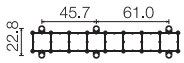
16.414 (1x5)



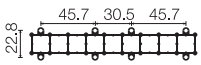
16.415 (1x6)



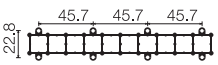
16.416 (1x7)



16.417 (1x8)



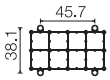
16.418 (1x9)



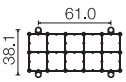
16.419 (1x10)

16.420 (2x2)

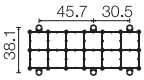
16.421 (2x3)



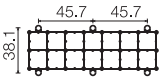
16.422 (2x4)



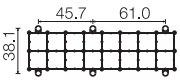
16.423 (2x5)



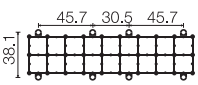
16.424 (2x6)



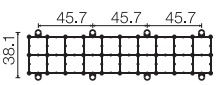
16.425 (2x7)



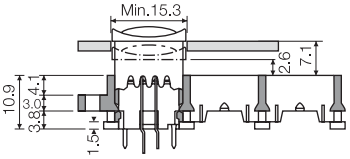
16.426 (2x8)

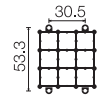


16.427 (2x9)

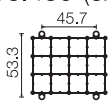


16.428 (2x10)

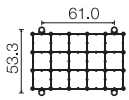




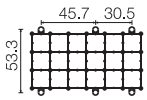
16.430 (3x3)



16.431 (3x4)



16.432 (3x5)



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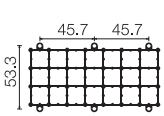
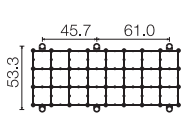
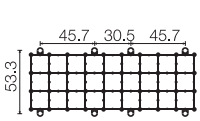


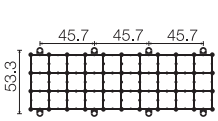
16.434 (3x7)



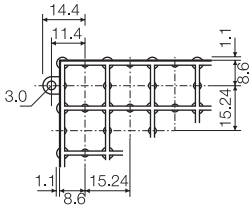
16.435 (3x8)

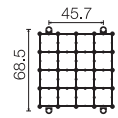


16.436 (3x9)

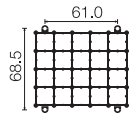


16.437 (3x10)

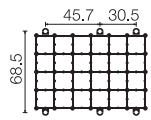




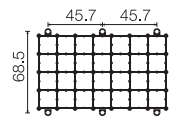
16.440 (4x4)



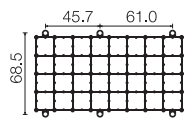
16.441 (4x5)



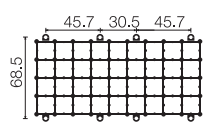
16.442 (4x6)



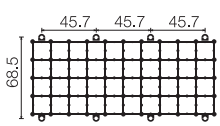
16.443 (4x7)



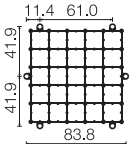
16.444 (4x8)



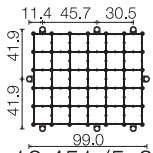
16.445 (4x9)



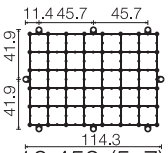
16.446 (4x10)



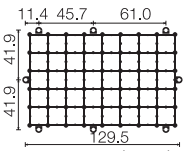
16.450 (5x5)



16.451 (5x6)



16.452 (5x7)



16.453 (5x8)

16.454 (5x9)

16.455 (5x10)

16.500 (10x10)

16.460 (6x6)

16.461 (6x7)

16.462 (6x8)

16.463 (6x9)

16.464 (6x10)

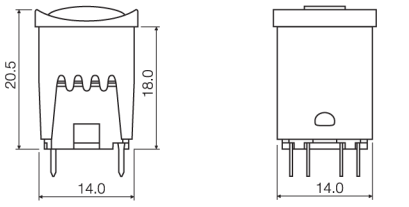
For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ 16324 - 16326

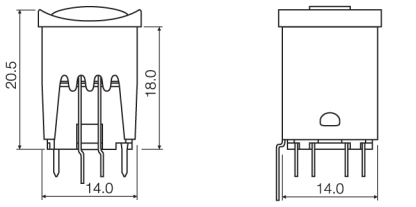
Technical Data

- Max. 250mA/120V/9W AC/6W DC
- 2 pole
- momentary or alternate
- 8 contact functions
- temperature range:
  low temp: -40/+75°C
  high temp: -40/+160°C
- through-hole version

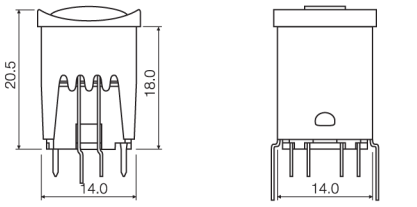
Dimensions



Dimensions (w/LED)



Dimensions (w/2 LEDs)



How to order

1 5	+	1 6 2 7 0	+	1 6 3 0 0	+	1 6 3 2 4

Switch
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.

Extender

Cap

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

Bezel

01 brown
03 grey
06 white
09 black

1 5	+	1 6 2 7 0	+	1 6 3 0 0	+		+	1 6 3 2 7	+	1 6 9 2 2

Switch

Extender

Cap

16325

16326

Lens
02 green
04 yellow
08 red

Lens 16327
2 required

LED
02 green
04 yellow
08 red

LED 16922
2 required

Ordering example: 15501 + 16270 + 1630008 + 1632509 + 1632708 + 1692208

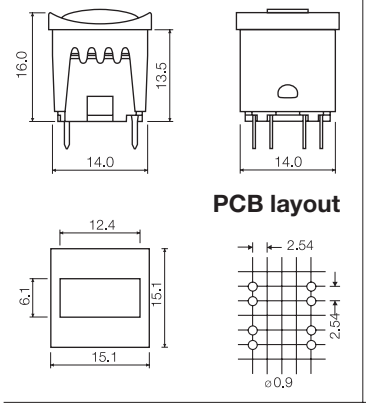
For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ 16310 - 16315

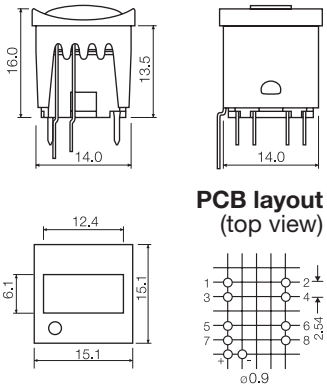
Technical Data

- Max. 250mA/120V/9W AC/6W DC
- 2 pole
- momentary or alternate
- 8 contact functions
- temperature range:
  low temp: -40/+75°C
  high temp: -40/+160°C
- through-hole version

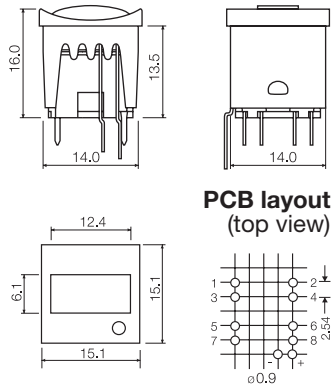
Dimensions (through-hole)



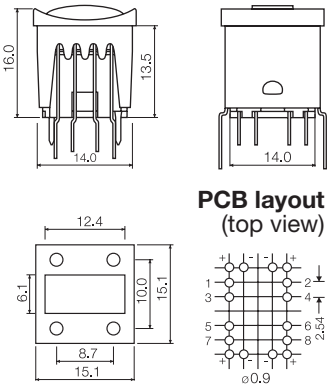
Dimensions (w/LED)



Dimensions (w/LED)



Dimensions (w/4 LEDs)



How to order

1 5 + **1 6 3 0 0** + **1 6 3 1 0**

Switch
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.

Cap

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

Bezel

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

1 5 + **1 6 3 0 0** + [ ] + **1 6 9 2 1**

Switch

Cap

Bezel 16311

LED 16921 **02** green
04 yellow
08 red

[ ] + **1 6 9 2 0**

Bezel 16312

LED 16920 **02** green
04 yellow
08 red

Bezel 16314

LED 16920 1 required
LED 16921 1 required

Bezel 16315

LED 16920 2 required
LED 16921 2 required

Ordering example: 15501 + 1630003 + 1631408 + 1692008 + 1692108

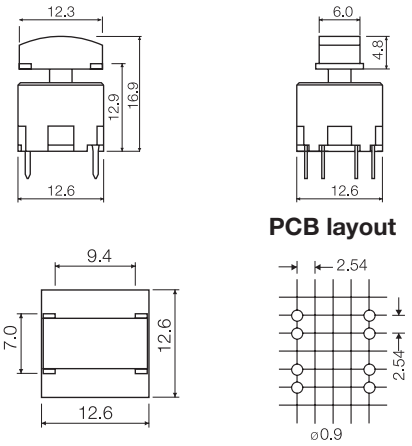
For updates of products and/or changes of specifications please see **www.mec.dk**

unimec™ 16300/16700/16800

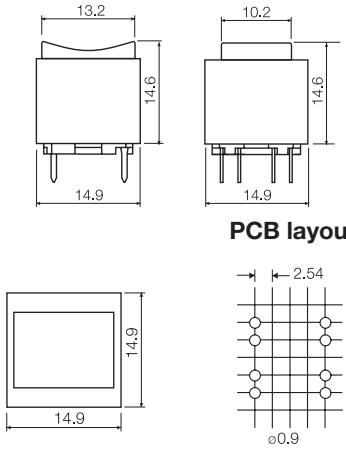
Technical Data

- Max. 250mA/120V/9W AC/6W DC
- 2 pole
- momentary or alternate
- 8 contact functions
- temperature range:
  low temp: -40/+75°C
  high temp: -40/+160°C
- through-hole version

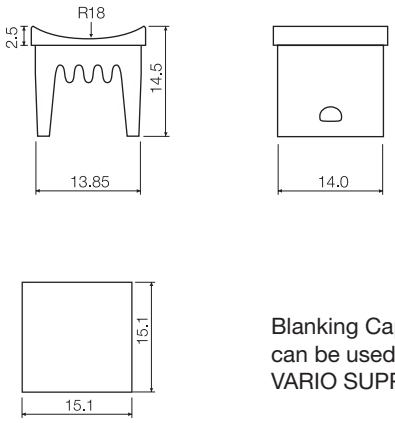
Dimensions 16300



Dimensions 16700



Dimensions 16800



Blanking Cap can be used with VARIO SUPPORT

How to order

1 5 + **1 6 3 0 0**

Switch
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.

Cap

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

1 5 + **1 6 7 0 0**

Switch

Cap

00 blue
02 green
03 grey
04 yellow

06 white
08 red
09 black

1 6 8 0 0

Blanking Cap

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

Ordering example: 15551 + 1670009

For updates of products and/or changes of specifications please see **www.mec.dk**