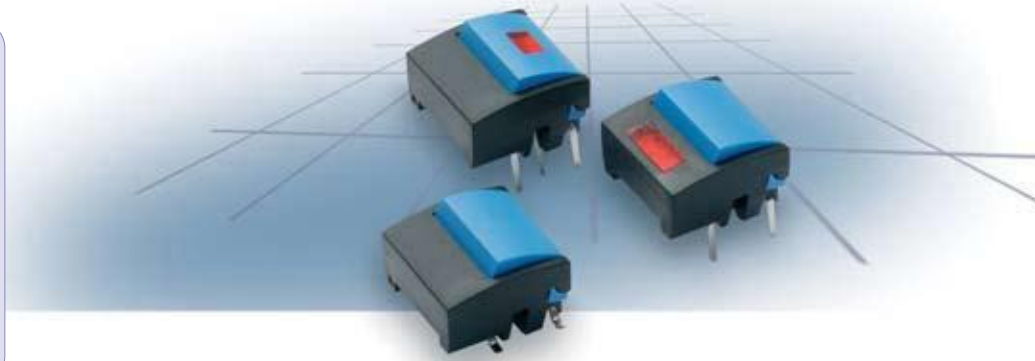
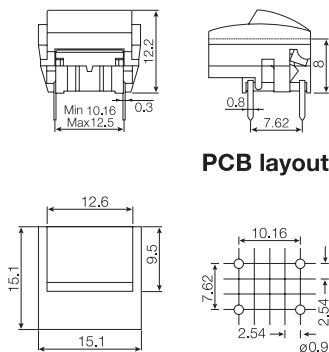


### Technical Data

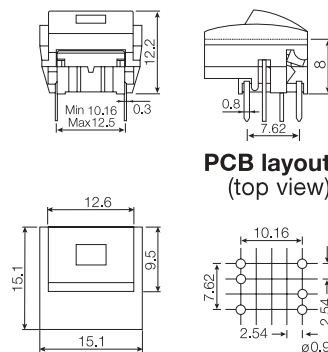
- ? through-hole or SMD
- ? 50mA/24VDC
- ? single pole/momentary
- ? 10.000.000 operations life time
- ? IP67 sealing
- ? temperature range:
  - low temp: -40/+115°C
  - high temp: -40/+160°C



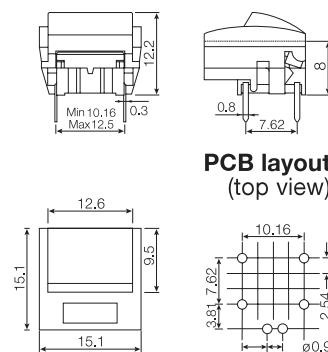
### Dimensions (through-hole)



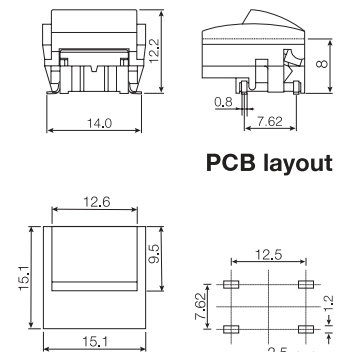
### Dimensions w/LED in switch (1C)



### Dimensions w/LED PCB mounted (2B)



### Dimensions (SMD)



### How to order

<b>3 A</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 B</b>	<input type="checkbox"/>	+	<b>2 A</b>	<input type="checkbox"/>	<b>For 1B and 2A only:</b>	
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.		<b>Cap</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black		<b>Bezel</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black	<b>30</b> ultra blue <b>40</b> dusty blue <b>42</b> aqua blue <b>32</b> mint green <b>33</b> tele grey <b>34</b> melon <b>38</b> noble red	<b>50</b> metal dark blue <b>53</b> metal light grey <b>57</b> metal dark grey <b>58</b> metal bordeaux

<b>3 A</b>	<b>T</b>	<input type="checkbox"/>	+	<b>1 C</b>	<input type="checkbox"/>	+	<input type="checkbox"/>	+	<b>2 A</b>	<input type="checkbox"/>
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.		<b>LED</b>	<b>00</b> blue <b>02</b> green <b>20</b> green <b>40</b> yellow <b>80</b> red		<b>Cap</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black	<b>Lens</b>	<b>1</b> transparent <b>2</b> green <b>4</b> yellow <b>8</b> red

<b>3 A</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 B</b>	<input type="checkbox"/>	+	<b>2 B</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.		<b>Cap</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black		<b>Bezel</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black	<b>Lens</b>

+	<b>2 B X X X</b>	<input type="checkbox"/>
	<b>LED for 2B bezel</b>	<b>20</b> green <b>40</b> yellow <b>80</b> red

Keycaps and bezels shown on this page can also be used on **illumec™ switch 4A** - see page 9. Part nos. for bezels for 4A are 2C and 2D.

Ordering example: 3ATL640 + 1C094 + 2A04

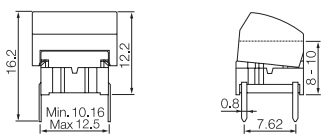
For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

### Technical Data

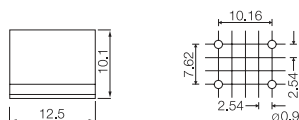
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  - low temp: -40/+115°C
  - high temp: -40/+160°C



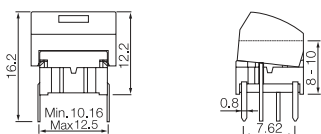
### Dimensions (through-hole) 1A



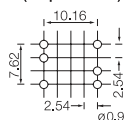
### PCB layout



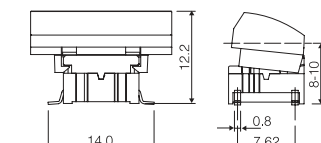
### Dimensions (w/LED) 1H



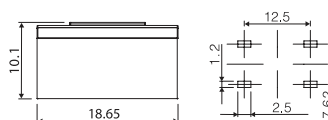
### PCB layout (top view)



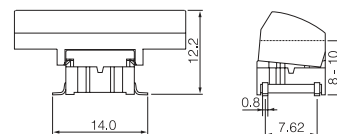
### Dimensions (SMD) 1ZA



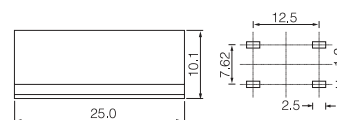
### PCB layout



### Dimensions (SMD) 1M



### PCB layout



### How to order

<b>3 A</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 A</b>	<input type="checkbox"/>		
Switch	<b>Mounting</b> T through-hole S surface mount	<b>L 6</b> low temp. <b>H 9</b> high temp.		Cap	00 blue 02 green 03* grey 04 yellow 06* white 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
				<b>1 Z A</b>	<input type="checkbox"/>		
				Cap			<b>*) Colours for 1ZA</b>

<b>3 A</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 M</b>	<input type="checkbox"/>		
Switch	<b>Mounting</b> T through-hole S surface mount	<b>L 6</b> low temp. <b>H 9</b> high temp.		Cap	00 blue 02 green 03 grey 04 yellow 06 white 08 red 09 black		

<b>3 A</b>	<b>T</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 H</b>	<input type="checkbox"/>	<input type="checkbox"/>
Switch	<b>Mounting</b> T through-hole	<b>L 6</b> low temp. <b>H 9</b> high temp.	<b>LED</b> 00 blue 20 green 40 yellow 80 red		Cap	00 blue 02 green 03 grey 04 yellow 06 white 08 red 09 black	<b>Lens</b> 1 transparent 2 green 4 yellow 6 frosted white 8 red

Keycaps shown on this page can also be used on **illumec™ switch 4A** - see page 9

Ordering example: 3ATL680 + 1H098

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

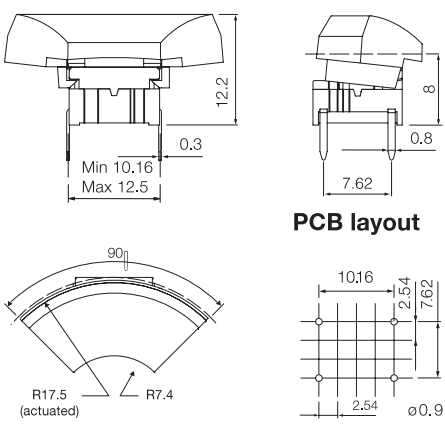
# multimec<sup>®</sup> Navimec<sup>™</sup>

## Technical Data

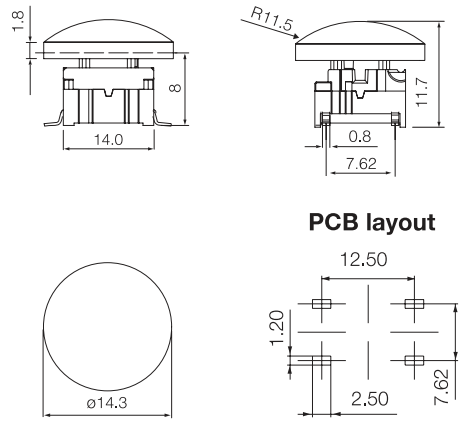
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:  
low temp: -40/+115°C  
high temp: -40/+160°C



### Dimensions 1ZB (through-hole)

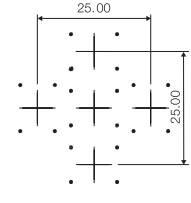


### Dimensions 1ZC (SMD)

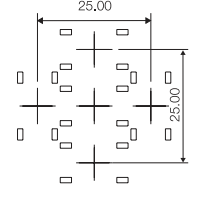


**Recommended panel cut-out:**  
ø35.0-35.5 Depending on application

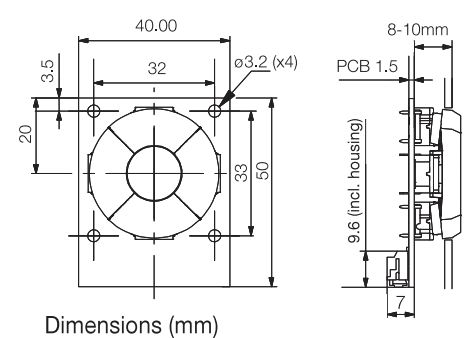
### PCB layout TH



### PCB layout SMD



### Dimensions Navimec<sup>™</sup> Module



### How to order

<b>3 A</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.	<b>Cap 1ZB</b>	<b>03</b> grey <b>06</b> white <b>09</b> black <b>30</b> ultra blue <b>40</b> dusty blue <b>42</b> aqua blue <b>50</b> metal dark blue <b>53</b> metal light grey <b>57</b> metal dark grey <b>58</b> metal bordeaux	
<b>3 F</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.	<b>Cap 1ZC</b>		

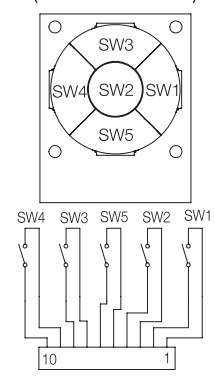
### Navimec<sup>™</sup> Module

- Part No. 9508000** Navimec<sup>™</sup> Module excl. keycaps
- Part No. 950XXYY** Navimec<sup>™</sup> Module incl. keycaps
- Part No. 9509XXXYYY** Navimec<sup>™</sup> Module incl. keycaps with legends

The module can be delivered with keycaps (4 x 1ZB and 1 x 1ZC) in solid colours or black keycaps with white legends.  
For module incl. keycaps in solid colours (950XXYY) please indicate colour code for 1ZBXX and colour code for 1ZCYY.  
For module incl. keycaps with legends (9509XXXYYY) please indicate legends for 1ZBXXX and legends for 1ZCYYY. All Caps are black with white legends. Please see legends available on page 23.

**Examples:** Module with 5 switches (4x3ATL6+1x3FTL6) mounted with 4x1ZB30 ultra blue and 1x1ZC42 aqua blue = 9503042.  
Module with 5 switches (4x3ATL6+1x3FTL6) mounted with 4x1ZB09XD136 (legend arrow) and 1x1ZC09118 (legend OK) = 9509136118.

### Circuit Diagram Navimec<sup>™</sup> Module (Front side View)



The plug on the Navimec<sup>™</sup> module is JST SMT S10B-PH-SM3-TB or similar.  
We recommend using  
Cable socket: JST PHR-10 or similar  
Contact: JST SPH-002T-PO.5S or similar.

**Ordering example:** 4x3ATL6+1ZB53 and 1x3FTL6+1ZC58 or Navimec<sup>™</sup> Module 9505358

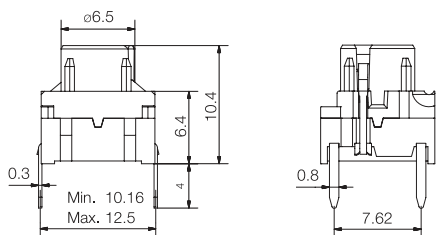
For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

### Technical Data

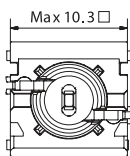
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  - high temp. switch; -40/+160°C
  - LED: -30/+85°C



### Dimensions (through-hole)

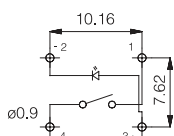


### Top View

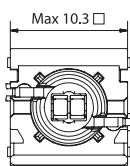
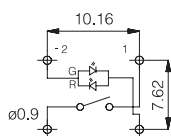


### PCB layout and Circuit Diagram

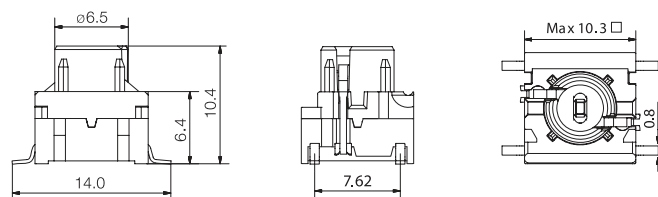
#### 1 LED



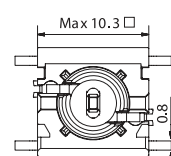
#### 2 LEDs



### Dimensions (SMD)

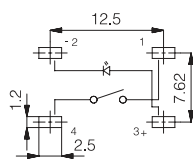


### Top View

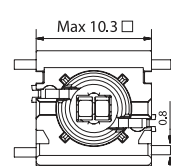
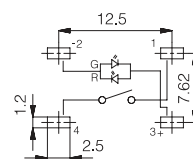


### PCB layout and Circuit Diagram

#### 1 LED



#### 2 LEDs



Technical specifications for 4F switch and LEDs see pages 35 and 36

### How to order

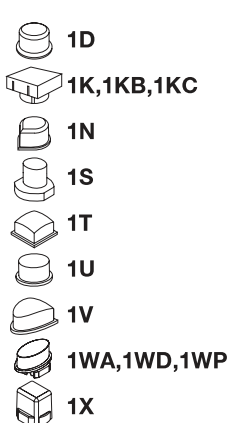
4 F

**Switch**   **Mounting**  
SH9 surface mount  
TH9 through-hole

LED   Illuminated

01  
22  
42  
61  
82  
2242  
8222  
8242

**Cap**



### Colour code

Code	Cap	Solid Colour	Illuminated Lens
11,16			
11,16			
10,12,14,16,18			1E Solid Colour + lens 1,2,4,6,8
11			1F Solid Colour + lens 1,2,4,6,8
16			1Q Solid Colour + lens 1,6
16			1R Solid Colour + lens 1,6
16			
16			
11			

### Colour codes

**LEDs**  
01 blue  
22 green  
42 yellow  
61 white  
82 red  
2242 green/yellow  
8222 red/green  
8242 red/yellow

**Illuminated Caps**  
10 frosted blue  
11 transparent  
12 frosted green  
14 frosted yellow  
16 frosted white  
18 frosted red

**Lenses**  
1 transparent  
2 green  
4 yellow  
6 frosted white  
8 red

### Solid Colours

**1E,1F**  
00 blue  
02 green  
03 grey  
04 yellow  
06 white  
08 red  
09 black

**1Q,1R**  
00 blue  
03 grey  
08 red  
09 black

### Dimensions

**Caps**  
1D,1E,1F   See Page 15  
1K,1KB,1KC   16  
1N   14  
1Q,1R   18  
1S   21  
1T,1U,1V   19  
1WA,1WD,1WP   17  
1X   20

Ordering example: 4FSH98242 + 1D11 or 4FTH922 + 1T16

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

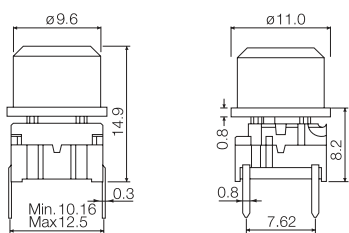
# multimec® 3F + 1D/1E/1F

## Technical Data

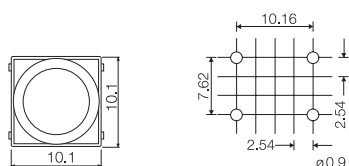
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  - low temp: -40/+115°C
  - high temp: -40/+160°C



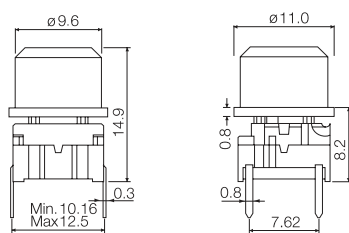
### Dimensions (through-hole)



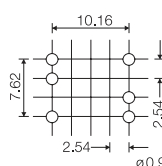
### PCB layout



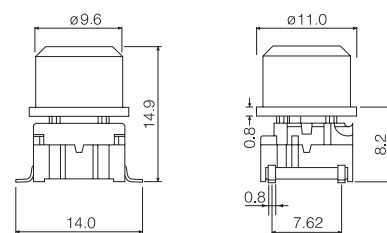
### Dimensions (w/LED)



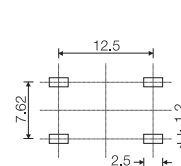
### PCB layout (top view)



### Dimensions (SMD)



### PCB layout



## How to order

**3 F**

Switch



**Mounting**

**T** through-hole  
**S** surface mount



**L 6** low temp.  
**H 9** high temp.

**1 D**

Cap



**00** blue  
**02** green  
**03** grey  
**04** yellow  
**06** white  
**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

**3 F**

Switch

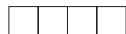


**Mounting**

**T** through-hole



**L 6** low temp.  
**H 9** high temp.



**LED**

**00** blue  
**20** green  
**40** yellow  
**60** white  
**80** red  
**2040** green/yellow  
**8020** red/green  
**8040** red/yellow

+



**Cap 1D**



**Cap 1E**



**Cap 1F**



**11** transparent  
**16** frosted white



**Lens**

**00** blue  
**02** green  
**03** grey  
**04** yellow  
**06** white  
**08** red  
**09** black

**1** transparent  
**2** green  
**4** yellow  
**6** frosted white  
**8** red

Keycaps shown on this page can also be used on **illumec™ switch 4F** - see page 13

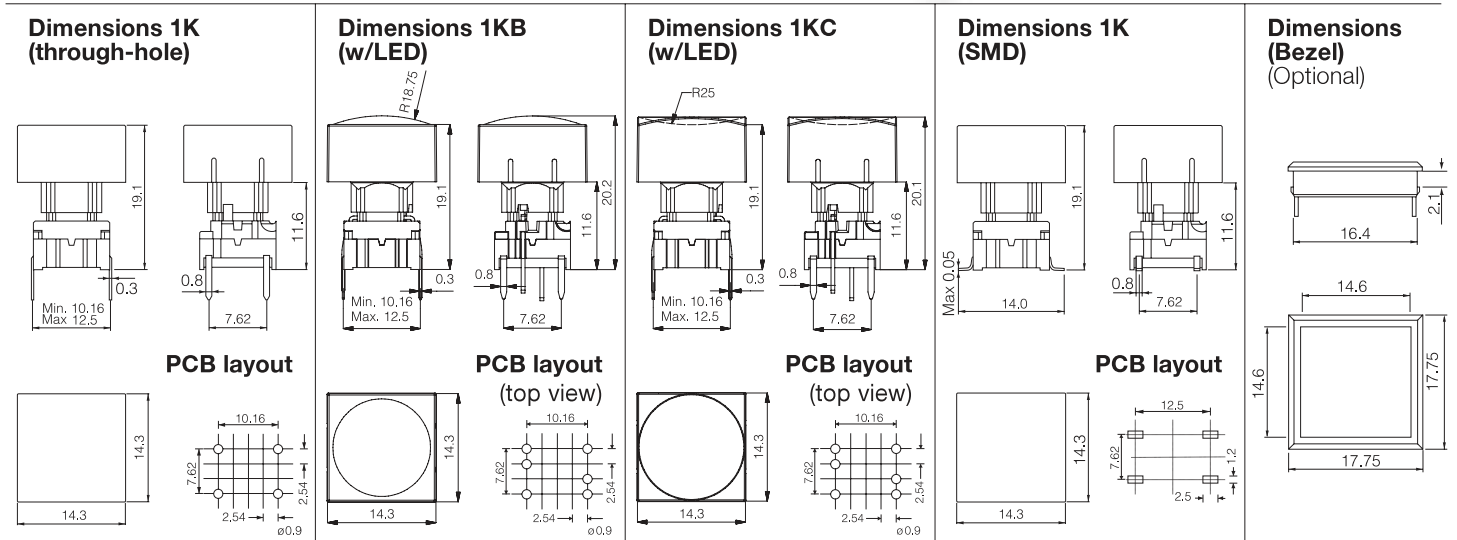
**Ordering example:** 3FTL620 + 1E032

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

# multimec® 3F + 1K/1KB/1KC

## Technical Data

- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  - low temp: -40/+115°C
  - high temp: -40/+160°C



## How to order

<b>3 F</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 K</b>	<b>1 6</b>	+	<b>2 K</b>	
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.		<b>Cap</b>	<b>00</b> blue <b>02</b> green <b>03</b> grey <b>04</b> yellow <b>06</b> white <b>08</b> red <b>09</b> black		<b>Bezel</b>	<b>03</b> grey <b>06</b> white <b>08</b> red <b>09</b> black

<b>3 F</b>	<b>T</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<input type="checkbox"/>	<b>1 1 1 6</b>	+	<b>2 K</b>	
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp. <b>H 9</b> high temp.	<b>LED</b>		<b>Cap</b>	<b>frosted white</b>		<b>Bezel</b>	<b>03</b> grey <b>06</b> white <b>08</b> red <b>09</b> black
	<b>T</b> through-hole <b>S</b> surface mount		<b>23</b> green <b>45</b> yellow <b>88</b> red			<b>1K</b>			
						<b>1KB</b>			
						<b>1KC</b>			

The 1K caps consist of a transparent lid and a diffuser lens.  
It is possible to make your own customized legend by placing a foil between the lid and the lens.

Keycaps shown on this page can also be used on  
**illumec™ switch 4F - see page 13**

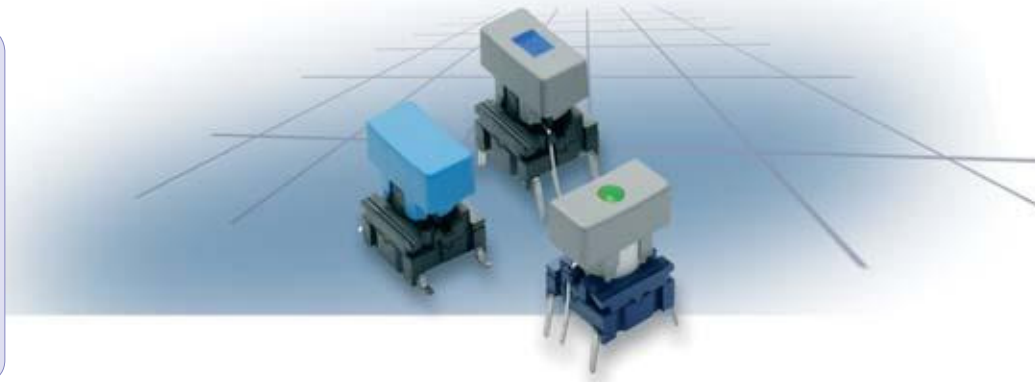
**Ordering example:** 3FTL688 + 1K1116

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

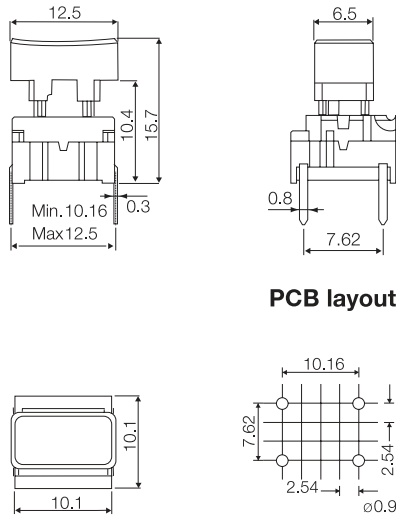
# multimec® 3F + 1P/1Q/1R

## Technical Data

- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  - low temp: -40/+115°C
  - high temp: -40/+160°C

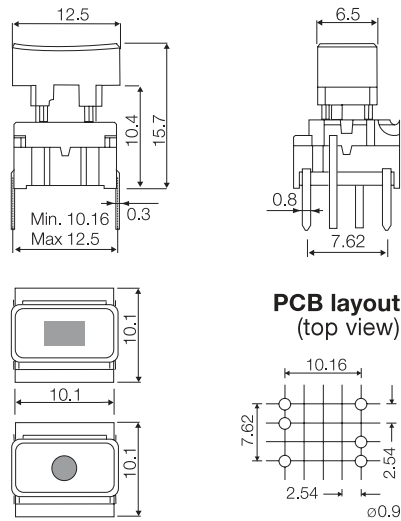


### Dimensions (through-hole)



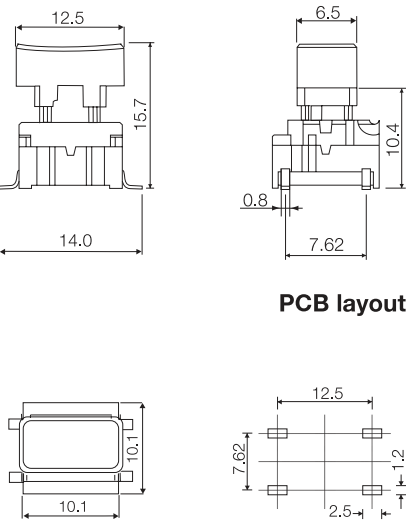
### PCB layout

### Dimensions (w/LED)



### PCB layout (top view)

### Dimensions (SMD)



### PCB layout

## How to order

**3 F**

Switch

**T**

Mounting

T through-hole  
S surface mount

**L 6**

L 6 low temp.  
H 9 high temp.

+

**1 P**

Cap



**00**

00 blue  
02 green  
03 grey  
04 yellow  
06 white  
08 red  
09 black

**3 F**

Switch

**T**

Mounting

T through-hole

**L 6**

L 6 low temp.  
H 9 high temp.

**LED**

00 blue  
20 green  
40 yellow  
60 white  
80 red  
2040 green/yellow  
8020 red/green  
8040 red/yellow

+

**1 Q**



**00**

00 blue  
03 grey  
08 red  
09 black

**Lens**

1 transparent  
6 frosted white

**1 R**



Keycaps shown on this page can also be used on  
illume™ switch 4F - see page 13

Ordering example: 3FTL680 + 1Q091

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

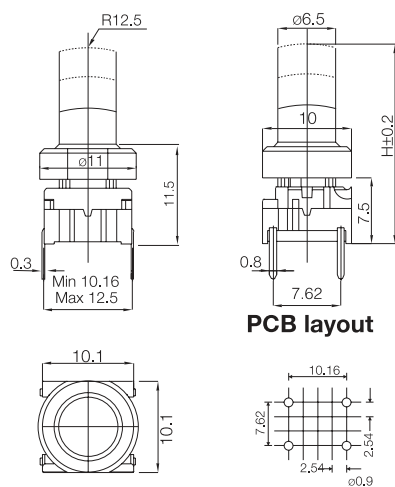
# multimec<sup>®</sup> 3F + 1S + 2S

## Technical Data

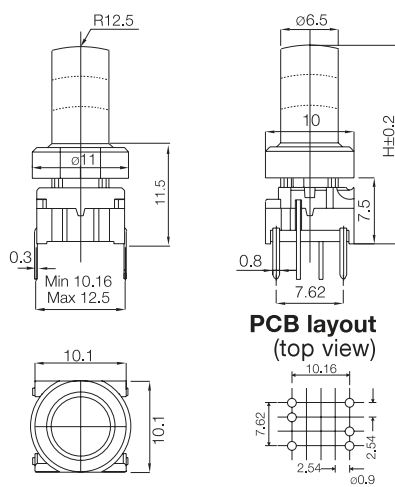
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:  
low temp: -40/+115°C  
high temp: -40/+160°C



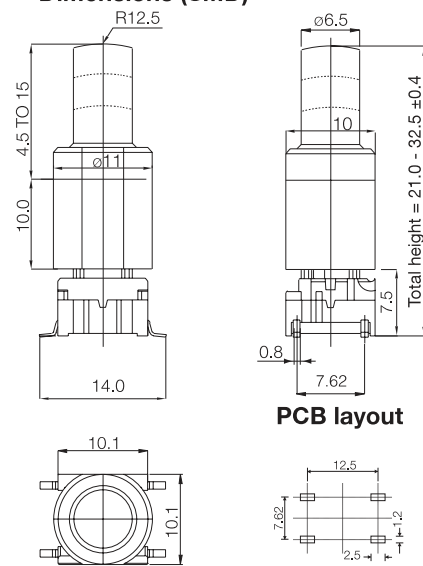
### Dimensions (through-hole)




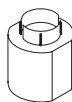
### Dimensions (w/LED)




### Dimensions (SMD)



## How to order

<b>3 F</b>	<input type="checkbox"/>	<input type="checkbox"/>	+	<b>1 S 0 9 -</b>	<input type="checkbox"/>	+	<b>2 S 0 9 -</b>	<input type="checkbox"/>	<b>0</b>
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp.		<b>Cap black</b>	<b>Height</b>		<b>Extender black</b>	<b>Height</b>	
	<b>T</b> through-hole	<b>H 9</b> high temp.			<b>16.0</b>			<b>05.0</b> (Optional)	
	<b>S</b> surface mount				<b>19.0</b>			<b>06.0</b> Adds 5-10mm to total height	
					<b>22.5</b>			<b>07.0</b>	
								<b>08.0</b>	
								<b>09.0</b>	
								<b>10.0</b>	

<b>3 F</b>	<b>T</b>	<input type="checkbox"/>	+	<input type="checkbox"/>	+	<b>1 S 1 1 -</b>	<input type="checkbox"/>	<b>0</b>
<b>Switch</b>	<b>Mounting</b>	<b>L 6</b> low temp.		<b>LED</b>		<b>Cap Transparent</b>	<b>Height</b>	
	<b>T</b> through-hole	<b>H 9</b> high temp.		<b>00</b> blue			<b>16.0</b>	
				<b>20</b> green			<b>19.0</b>	
				<b>40</b> yellow			<b>22.5</b>	
				<b>60</b> white				
				<b>80</b> red				
				<b>2040</b> green/yellow				
				<b>8020</b> red/green				
				<b>8040</b> red/yellow				

### Customised Heights:

3F+1S is available in any height from 12.0 to 24 mm.

3F+1S+2S is available in any height from 17.0 to 34 mm.

Min. height for 1S11 is 16.0 and for 1S09 min height is 12.0 mm.

Min. order qty. for custom heights is 2.000 pcs.

For heights less than 12.0 mm, please refer to 3E switch range.

Keycaps shown on this page can also be used on **illumec™ switch 4F - see page 13**

**Ordering example:** 3FTL640 + 1S11-19.0

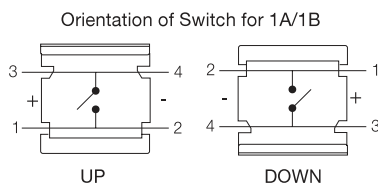
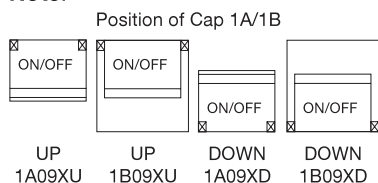
For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)





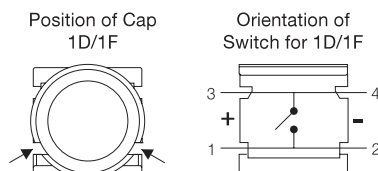
All standard legends are white on black caps.  
The size of the legends listed may not correspond to the actual size. Please ask your local distributor, if you do not find what you need on the list. New legends may have been added after this catalogue was printed.  
Custom legends and other colour combinations are available, please contact your local distributor.

#### Note!



For 1A/1B the orientation shown above is standard.

**Please consider the switch orientation you require before specifying legend orientation.**



For the 1D and 1F caps the orientation shown above is standard.

**Please consider the switch orientation you require before specifying legend orientation.**

## Standard Keycap Legends

LEGEND	Part no.							
	1A09XU_	1A09XD_	1B09XU_	1B09XD_	1D09_	1F096_	1ZB09XD_	1ZC09_
0	000	000	000	000	000	000		
1	001	001	001	001	001	001		
2	002	002	002	002	002	002		
3	003	003	003	003	003	003		
4	004	004	004	004	004	004		
5	005	005	005	005	005	005		
6	006	006	006	006	006	006		
7	007	007	007	007	007	007		
8	008	008	008	008	008	008		
9	009	009	009	009	009	009		
A	010	010	010	010				
B	011	011	011	011				
C	012	012	012	012				
D	013	013	013	013				
#	107	107	107	107	107	107		
*	019	019	019	019	019	019		
☐	016	016	016	016				
→	033	033	033	033	033			
←	133	133	133	133	133			
↑	034	034	034	034	034			
↓	134	134	134	134	134			
↖	135	135	135	135	135	135		
+	054	054	054	054				
-	059	059	059	059				
•	056	056	056	056				
▲							136	
⏻	123	123	123	123	123	123		123*
START	031	031	031	031				
CLEAR	036	036	036	036				
LOAD	037	037	037	037				
RESET	038	038	038	038				038
CANCEL	048	048	048	048				
ENTER								105
OK								118
SET								119
MENU								120
FUNC								121
HOME								122

\* Also on 1ZC16 for illumination

# multimec® basic switch modules

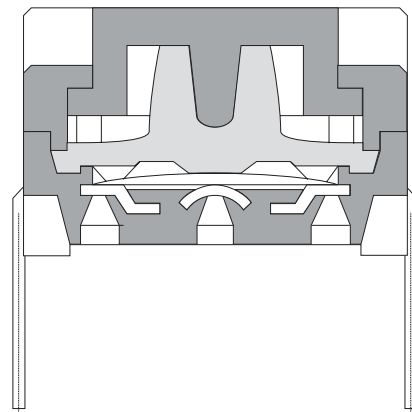
Through-hole Versions							
3A		3C		3E	3F		
For 1A/1B/1M/1ZA/1ZB	w/LED for 1C/1H			For 3E actuators/Varimec	For 1D/1K/1N/1P/1S/1T/1U/1V/1WA/1WD/1WG/1WP/1X/1ZC/1GA/1GC	w/LED for 1D/1E/1F/1N/1Q/1R/1S/1X	w/LED for 1K/1KB/1KC/1T/1U/1V/1WA/1WD/1WP
<b>Standard Versions</b>							
3ATL6 3ATH9	3ATL600/20/40/80	3CTL6/3CTL9 3CTH9	3ETLXX-H* 3ETHXX-H*	3FTL6 3FTH9	3FTL600/20/40/60/80/ 2040/8020/8040	3FTL623/45/88	
* 3E available in 6 standard heights: 08.0, 09.5, 10.4, 11.0, 12.0, 15.0 mm. Other heights between 08.0 and 15.0 mm are available upon request.							
Specials: Gold contacts, quiet version and actuation force other than 3.0N							

Surface Mount Versions				illumec™ Through-hole Versions		illumec™ Surface Mount Versions	
3A	3C	3E	3F	4AT w/LEDs	4FT w/LEDs	4AS w/LEDs	4FS w/LEDs
For 1A/1B/1M/1ZA/1ZB		For 3E actuators/Varimec	For 1D/1K/1N/1P/1S/1T/1U/1V/1WA/1WD/1WP/1X/1ZC/1GA/1GC	For 1C/1H	For 1D/1E/1F/1K/1KB/1KC/1N/1Q/1R/1S/1T/1U/1V/1WA/1WD/1WP/1X	For 1C/1H	For 1D/1E/1F/1K/1KB/1KC/1N/1Q/1R/1S/1T/1U/1V/1WA/1WD/1WP/1X
<b>Standard Versions</b>				<b>Standard Versions</b>			
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9/3FSH9R	4ATH901/22/42/61/82/ 2242/8222/8242	4FTH901/22/42/61/82/ 2242/8222/8242	4ASH901/22/42/61/82/ 2242/8222/8242	4FSH901/22/42/61/82/ 2242/8222/8242

Co-planarity = ≤ 0.05

Right Angle Versions			
3C	3E	3F	3F w/LED
	For 3E actuators/Varimec	For 1D/1K/1N/1P/1S/1T/1U/1V/1W/1WA/1WD/1WP/1X/1ZC/1GA/1GC	For 1D/1E/1F/1N/1Q/1R/1S/1X
<b>Standard Versions</b>			
3CTL6RAS	3ETXX-X.XRAS	3FTL6RAS	3FTL600/20/40/60/80/ 2040/8020/8040RAS

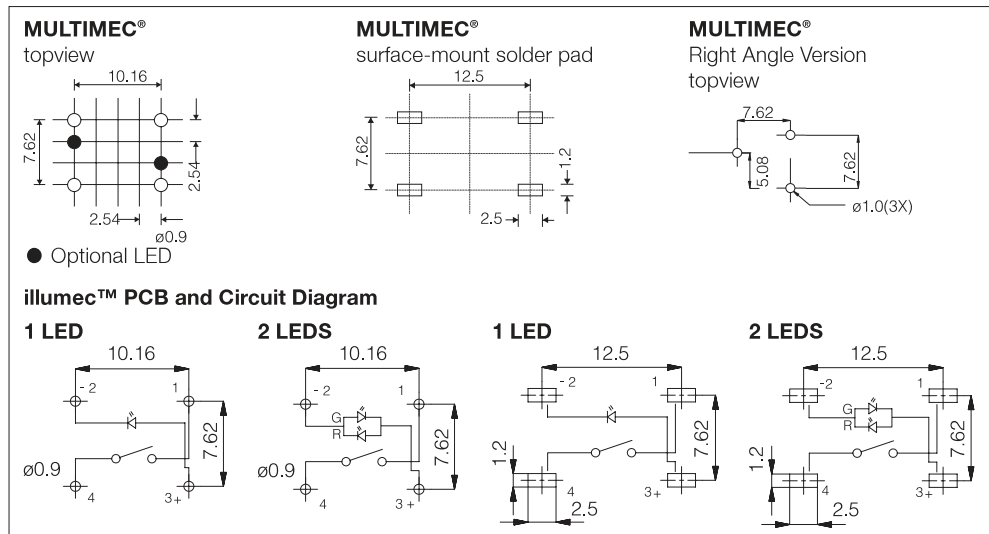
## multimec® Cross Section



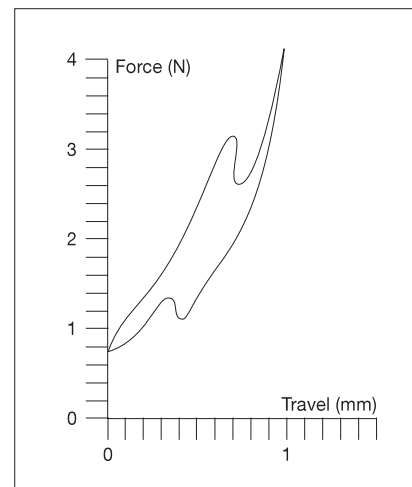
DIMENSIONS (mm) Unless otherwise specified, all tolerances ± 0.2

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

### Recommended PCB layout



### Operating Force (typical example)



Tape and reel is available for the parts listed and has the following specifications:

<b>Reel diameter</b>	ø330mm
<b>Tape width</b>	24mm
<b>Pitch</b>	see list
<b>Tape and reel material</b>	antistatic or better
<b>Quantity per reel</b>	see list

### 3A/3C/3E/3F multimec® tape & reel

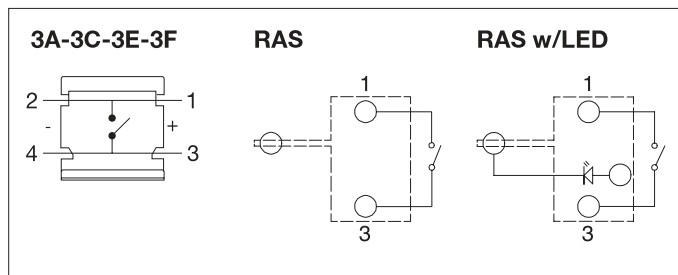
Part No.	Ordering Code	Pitch	Quantity per reel
3ASH9	3ASH9R	16	500
3CSH9	3CSH9R	16	500
3ESH9	3ESH9R	16	500
3ESH9-08.0	3ESH9R08.0	20	250
3ESH9-09.5	3ESH9R09.5	20	250
3ESH9-10.4	3ESH9R10.4	20	250
3ESH9-11.0	3ESH9R11.0	20	250
3ESH9-12.0	3ESH9R12.0	20	250
All varimec below 12.5	R after the part no.	20	250
3FSH9	3FSH9R	20	250

### 4F illumec™ tape & reel

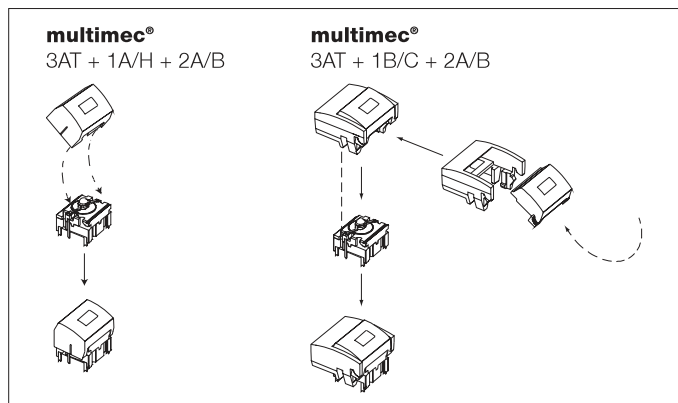
Part No.	Ordering Code	Pitch	Quantity per reel
4FSH901	4FSH901R	20	250
4FSH922	4FSH922R	20	250
4FSH942	4FSH942R	20	250
4FSH961	4FSH961R	20	250
4FSH982	4FSH982R	20	250
4FSH92242	4FSH92242R	20	250
4FSH98222	4FSH98222R	20	250
4FSH98242	4FSH98242R	20	250

Specifications are according to EIA 600481-3 and IEC 60286-3

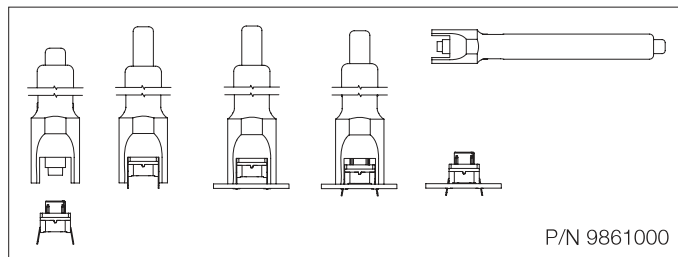
### Circuit Diagram



### How to Assemble



### Mounting Tool for Through-hole versions

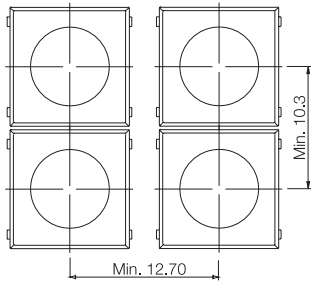


Specifications are subject to change without notice.

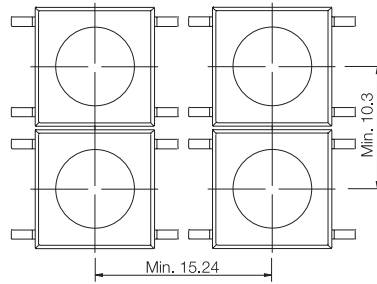
For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

## Basic switch spacing

### through-hole

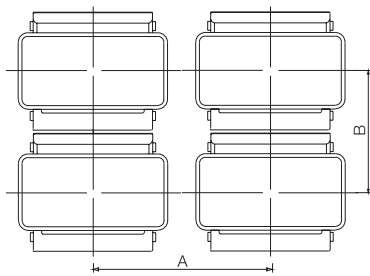


### surface-mount

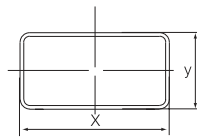


## Recommended switch/cap spacing

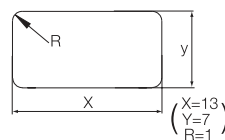
### Switch spacing



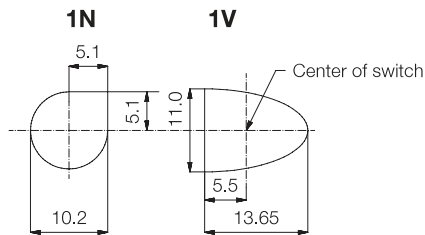
### Cap dimension



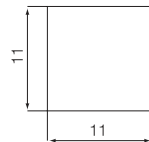
### Panel cut-out



### Panel Cut-out



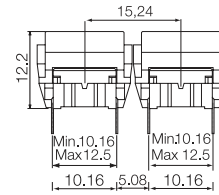
### 1T



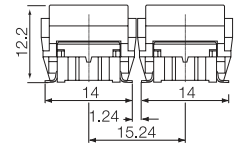
Spacing in mm

## Spacing examples

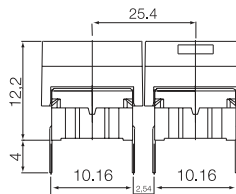
### multimec® 3AT + 1B/C + 2A/B



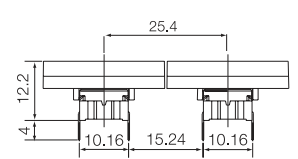
### multimec® 3AS + 1B + 2A/B 4AS + 1B/1C + 2C/2D



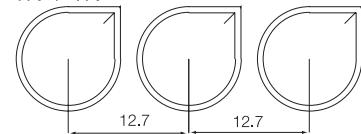
### multimec® 3AT + 1A/H



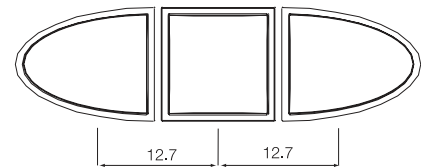
### multimec® 3AT + 1M



### multimec® 1N + 1N + 1N



### multimec® 1V + 1T + 1V



Cap series	Recommended* min. switch spacing AxB	Nominal cap dimension W x H	Recommended min. panel cut-out
1A	12.7 x 10.16	12.6 x 10.1	13.0 x 10.5
1B/1C+2A/2B	15.24 x 15.24	15.1 x 15.1	15.5 x 15.5
1D/1E/1F	12.7 x 12.7	ø9.6	ø10.0
1K	15.24 x 15.24	14.3 x 14.3	14.7 x 14.7
1M	25.4 x 10.16	25.0 x 10.1	25.7 x 10.5
1N	12.7 x 12.7	ø9.8/□4.9	ø10.2/□5.1
1P/1Q/1R	15.24 x 10.16	6.5 x 12.5	7.0 x 13.0, R Max. 1.0
1S	12.7 x 10.16	ø6.5	ø7.0
1T	12.7 x 12.7	10.6 x 10.6	11.0 x 11.0
1U	12.7 x 12.7	ø10.6	ø11.0
1V (pointing outwards)	12.7 x 12.7	10.6 x 13.25	11.0 x 13.65
1X	12.7 x 12.7	9.4 x 7.4	9.8 x 7.9

\*A dimension with surface mount version is min. 15.24. Depending on manufacturing technology it may be necessary either to reduce pad dimension, or to increase spacing.

In all applications the total assembly tolerance must be analysed by the user (board tolerance, front panel, assembly accuracy), to secure enough room for a free switch movement in the final product. The specifications on this page are to be considered as an aid only. MEC cannot be held responsible for the final assembly.

For updates of products and/or changes of specifications please see [www.mec.dk](http://www.mec.dk)

# multimec<sup>®</sup> technical specifications

## RoHS Compatible

	3A-3C-3E-3F Low Temperature Versions		3A-3C-3E-3F High Temperature Versions		illumec™ 4A - 4F High Temperature Versions	
	Silver	Gold	Silver	Gold	Silver	Gold
<b>Electrical Specifications</b>						
Contact resistance	<30m Ω - typ. 10m Ω		<30m Ω - typ. 10m Ω		<30m Ω - typ. 10 m Ω	
Insulation resistance	>10M Ω		>10M Ω		>10M Ω	
Recommended load	0.5-50mA 24VDC	0.5μ-50mA 24VDC	0.5-50mA 24VDC	0.5μ-50mA 24VDC	0.5-50mA 24VDC	0.5μ-50mA 24VDC
Contact bounce	<2mS - typically 0.5mS		<2mS - typically 0.5mS		<2mS - typically 0.5mS	
<b>Mechanical Specifications</b>						
Standard actuation force (switch)	3.0N typ.		3.0N typ.		3.0N typ.	
Max. actuation force without cap	100N for 10 sec.		100N for 10 sec.		100N for 10 sec.	
Key travel (switch)	1 mm		1 mm		1 mm	
Life time (switch)	>10.000.000 cycles		>10.000.000 cycles		>10.000.000 cycles	
<b>Temperature Range</b>						
Working temperature	Min. -40°C Max. +115°C		Min. -40°C Max. +160°C		Min. -30°C Max. +85°C*	
Storage temperature	Min. -40°C Max. +115°C		Min. -40°C Max. +160°C		Min. -30°C Max. +85°C*	
<b>Soldering IEC 68-2-20</b>	Wave - max. 260°C for max. 10 sec., please refer to usage guidelines. Soldering iron - max. 350°C for max. 3 sec. Flux tight.		Infrared, vapour phase, wave - max. 240°C for max. 40 sec. or max. 260°C for max. 30 sec. Soldering iron - max. 350°C for max. 3 sec. Flux tight.		Infrared, vapour phase, wave - max. 240°C for max. 40 sec. or max. 260°C for max. 30 sec. Soldering iron - max. 350°C for max. 3 sec. Flux tight.	
<b>Environmental Endurance IEC 68-2-3</b>						
Temperature	+40°C		+40°C		+40°C	
Humidity	93% RH		93% RH		93% RH	
Duration	56 Days		56 Days		56 Days	
<b>Temperature Cycling IEC 68-2-14</b>						
Temperature limit	Min. -40°C - Max. +125°C		Min. -40°C - Max. +125°C		Min. -40°C - Max. +125°C	
Number of cycles	10		10		10	
Exposure time at each temperature	30 min.		30 min.		30 min.	
Recovery time before measurements	16 hrs.		16 hrs.		16 hrs.	
Sealing IEC 529	IP-67		IP-67		IP-67	
Cleaning	Standard methods - see usage guidelines		Standard methods - see usage guidelines		Standard methods - see usage guidelines	
<b>Vibration Test IEC 68-2-6</b>						
Cycles					10	
Cycles time					2 hrs.	
<b>Material Specifications - Switches</b>						
Housing	PBT UL94VO		PPS UL94VO		PPS UL94VO	
Actuator	PBT UL94VO		PPS UL94VO		PPS UL94VO	
Sealing + spring	Silicone rubber		Silicone rubber		Silicone rubber	
Contact spring	Stainless steel + 3μAg	Stainless steel + 1μAu	Stainless steel + 3μAg	Stainless steel + 1μAu	Stainless steel + 3μAg	Stainless steel + 1μAu
Fixed contacts	SnCu + 2μNI + 3μAg	SnCu + 2μNI + 1μAu	SnCu + 2μNI + 3μAg	SnCu + 2μNI + 1μAu	SnCu + 2μNI + 3μAg	SnCu + 2μNI + 1μAu
Terminals	SnCu + 2μNI + 3μSn100	SnCu + 2μNI + 3μSn100	SnCu + 2μNI + 3μSn100	SnCu + 2μNI + 3μSn100	SnCu + 2μNI + 3μSn100	SnCu + 2μNI + 3μSn100
<b>Material Specifications - Caps &amp; Bezels</b>						
<b>Material</b>	<b>Parts</b>			<b>Temp limit</b>	<b>UL rating</b>	
ABS	1A, 1B, 1C, 1D, 1E, 1F, 1H, 1K, 1M, 1N, 1P, 1Q, 1R, 1T, 1U, 1V, 1WA, 1WD, 1WP, 1X, 1ZA, 1ZB, 1ZC.			Max. 65°C	UL94HB	
Polycarbonate	All lenses, 3E coloured actuators			Max. 85°C	UL94V1	
LCP	Black actuator of 3E			Max. 160°C	UL94VO	
PPS	1S, 2S			Max. 160°C	UL94VO	
Polyamide	Actuator of Varimec™, 1GA/1GC			Max. 160°C	UL94VO	
<b>Legends Adhesion</b>	ISO Class: 1/ASTM Class: 4B DIN EN ISO 2409					

\* LED max. working temperature

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For 3A switches		3AXXX (for 1C/1H)				2BXXX			
Colour		B	G	Y	R	G	Y	R	
Colour Codes		00	20	40	80	20	40	80	
<b>Absolute Maximum Ratings</b> (Ta=25°C)									
Power	mW	105	100	60	100	75	60	60	
Current forward	mA	30	30	20	30	20	20	20	
Forward peak current	mA	150	120	80	120	60**	60**	60**	
Voltage reverse	V	5	5	5	5	3	3	3	
Operating temperature	°C	-40 - +85			-55 - +100			-25 - +85	
Storage temperature	°C	-40 - +85			-55 - +100			-30 - +100	
Soldering temperature	°C	260/5 sec.			260 for max. 3 sec.			260 for max. 5 sec.	
<b>Electrical-Optical Characteristics</b> (Ta=25°C)									
Voltage forward	Typ. V	3.8	2.1*	2.1*	2.0*	2.1	2.1	2.0	
	Max. V	4.5	2.8*	2.8*	2.8*	3.0	3.0	3.0	
Current reverse (VR = 5V)	µA	10	100	100	100	10	10	10	
Wave length	nm	466	565	585	630	563	585	650	
Spread	Δnm	30	30	35	40	40	40	40	
Spread angle	degree	40	90	90	90	45	45	45	
<b>Luminous Intensity</b>	Min. mcd	4	0.7	1.7	1.1	9.0	5.6	5.6	
	Typ. mcd	10	2.5	5.6	3.7	25	16	16	
Orientation	The longer pin is the anode, the shorter is the cathode								

\*If = 20mA, \*\*Pulse width 1ms Duty cycle 1:5

For 3F switches		3FXXX (for 1E-1F-1N-1Q-1R-1S-1X)						3FXXX (for 1K-1T-1U-1V-1W)					
Colour		B	G	Y	W	R	G/Y	R/G	R/Y	G	Y	R	
Colour Codes		00	20	40	60	80	2040	8020	8040	24	45	89	
<b>Absolute Maximum Ratings</b> (Ta=25°C)													
Power	mW	105	70	60	114	60	120	120	120	60	130	80	
Current forward	mA	30	20	20	30	20	25	25	25	25	40	30	
Forward peak current	mA	200	60**	60**	100	60**	150	150	150	100	500	1000	
Voltage reverse	V	5	3	3	5	3	5	5	5	5	12	12	
Operating temperature	°C	-25 - +85			-40 - +85		-25 - +85		-40 - +85		-40 - +85		-55 - +100
Storage temperature	°C	-30 - +100			-40 - +100		-30 - +100		-40 - +85		-40 - +100		-55 - +100
Soldering temperature	°C	260 for max. 5 sec.			260 for max. 2 sec.		260 for max. 5 sec.		260 for max. 2 sec.		260 for max. 5 sec.		
<b>Electrical-Optical Characteristics</b> (Ta=25°C)													
Voltage Forward	Typ. V	2.1	2.1	2.1	3.3	2.0	2.1	2.1	2.1	2.0*	2.3***	2.0***	
	Max. V	2.8	3.0	3.0	3.8	3.0	2.8	2.8	2.8	2.4*	2.5***	2.3***	
Current reverse (VR = 5V)	µA	2	10	10	0.01	10	2	2	2	10	10	10	
Wave length	nm	460	563	585	NA	650	565/590	625/565	625/590	573	587	633	
Spread	Δnm	40	40	40	NA	40	35	35	35	20	45	16	
Spread angle	degree	20	45	45	34	45	60	60	60	100	90	85	
<b>Luminous Intensity</b>	Min. mcd	20	9.0	5.6	280	5.6	8	8	8	10****	71****	180****	
	Typ. mcd	25	25	16	600	16	25	25	25	20****	112****	355****	
Orientation	The longer pin is the anode, the shorter is the cathode. For bicolor LEDs the anode for the first colour (ex. 2080) is the longer pin.												

\*\*\*If = 50mA, \*\*\*\*Luminous Flux mlm

For 4A/4F switches		illume <sup>™</sup> LEDs specifications				
Colour		B	G	Y	W	R
Colour Codes		01	22	42	61	82
<b>Absolute Maximum Ratings</b> (Ta=25°C)						
Power	mW	60	65	65	80	65
Current forward	mA	20	25	25	15	25
Forward peak current	mA	150	150	100	200	100
Voltage reverse	V	5	12	12	5	12
Operating temperature	°C	-30 - +85				
Storage temperature	°C	-30 - +85				
Soldering temperature	°C	245 for max. 10 sec.				
<b>Electrical-Optical Characteristics</b> (Ta=25°C)						
Voltage forward	Typ. V	3.35	2.2	2	3.05	2
	Max. V	3.5	2.5	2.5	3.2	2.5
Current reverse (VR = 5V)	µA	0.01	0.02	0.01	0.01	0.01
Wave length	nm	470	570	588	n.a.	633
Spread	Δnm	n.a.	30	16	n.a.	16
Spread angle	degree	145	160	160	138	160
<b>Luminous Intensity</b>	Min. mcd	30	28	112	28	112
	Typ. mcd	35	70	150	35	150
Optical Intensity	Lm/w	4				2.5

B= Blue, G= Green, Y= Yellow, R= Red, W= White, G/Y= Green/Yellow, R/G= Red/Green, R/Y= Red/Yellow  
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