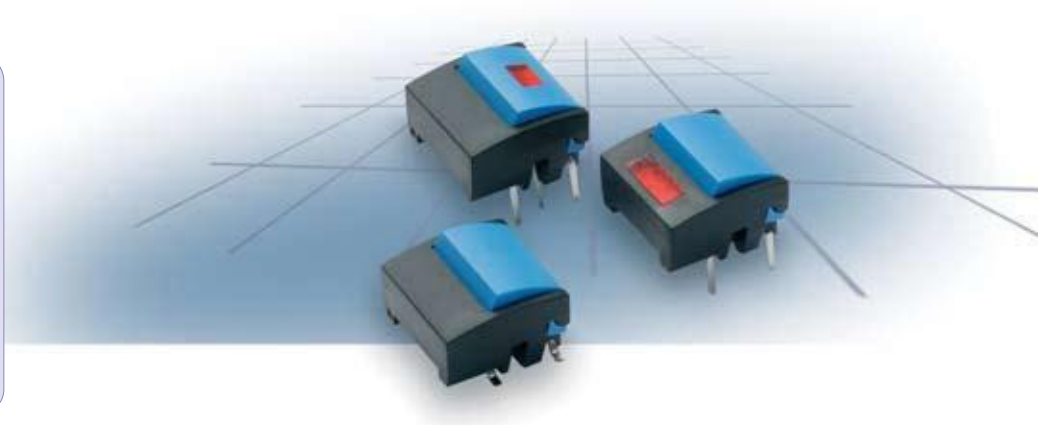
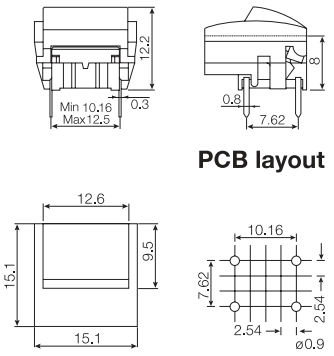
multimec® 3A + 1B/1C + 2A/2B

Technical Data

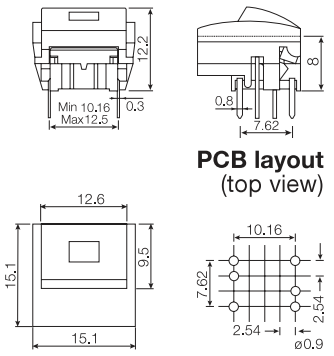
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  low temp: -40/+115°C
  high temp: -40/+160°C



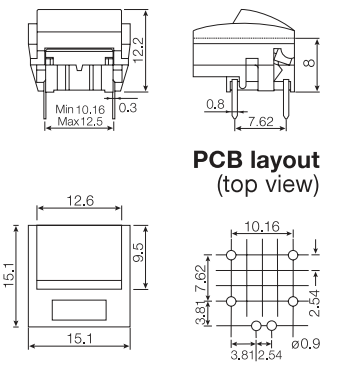
Dimensions (through-hole)



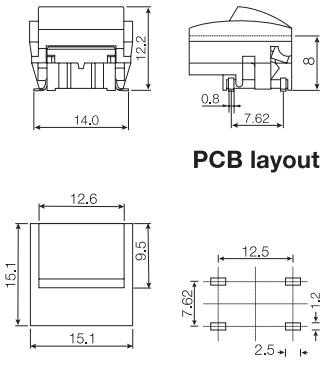
Dimensions w/LED in switch (1C)



Dimensions w/LED PCB mounted (2B)



Dimensions (SMD)



How to order

3 A — **Switch**

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

L 6 low temp.
H 9 high temp.

1 B — **Cap**

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

2 A — **Bezel**

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

For 1B and 2A 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

---

3 A — **Switch**

T — **Mounting**
- **T** through-hole

L 6 low temp.
H 9 high temp.

LED
- **00** blue
- **20** green
- **40** yellow
- **80** red

1 C — **Cap**

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

Lens
- **1** transparent
- **2** green
- **4** yellow
- **8** red

2 A — **Bezel**

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

---

3 A — **Switch**

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

L 6 low temp.
H 9 high temp.

1 B — **Cap**

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

2 B — **Bezel**

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

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

2 B X X X — **LED** for 2B bezel

- **20** green
- **40** yellow
- **80** 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

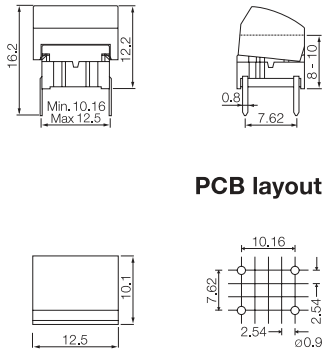
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® 3A + 1A/1H/1M/1ZA

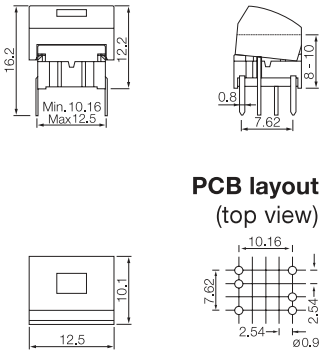
Technical Data

- 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

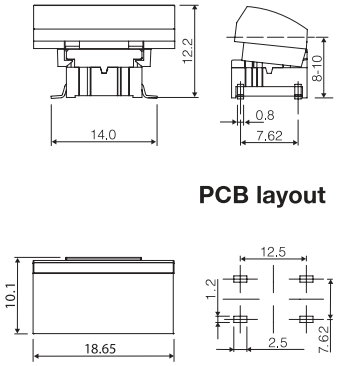
Dimensions (through-hole) 1A



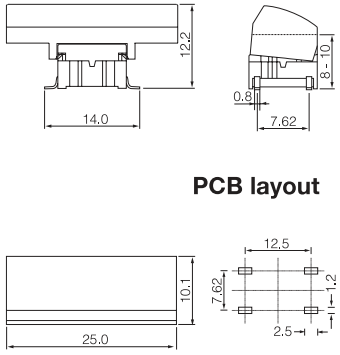
Dimensions (w/LED) 1H



Dimensions (SMD) 1ZA



Dimensions (SMD) 1M



How to order

3 A — **Switch**

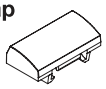
Mounting
T through-hole
S surface mount

L 6 low temp.
H 9 high temp.

+

1 A — **Cap**

1 Z A — **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

***) Colours for 1ZA**

---

3 A — **Switch**

Mounting
T through-hole
S surface mount

L 6 low temp.
H 9 high temp.

+

1 M — **Cap**

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

---

3 A — **Switch**

T — **Mounting**
T through-hole

L 6 low temp.
H 9 high temp.

LED
00 blue
20 green
40 yellow
80 red

+

1 H — **Cap**

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

Lens
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

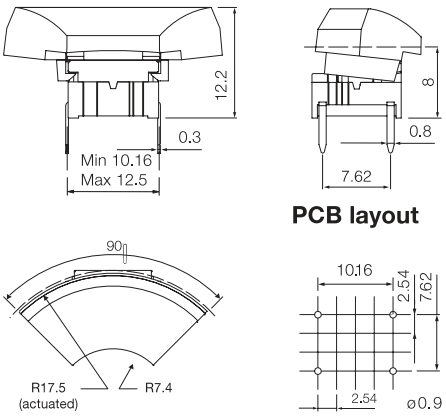
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® Navimec™

Technical Data

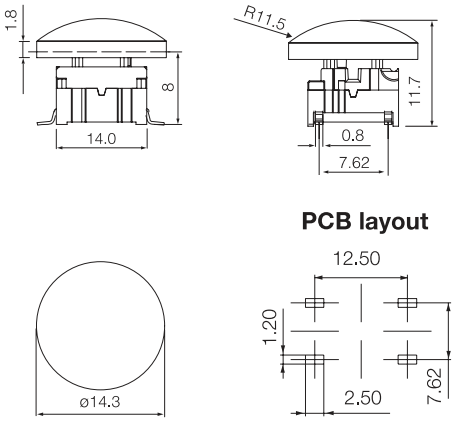
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  low temp: -40/+115°C
  high temp: -40/+160°C

Dimensions 1ZB (through-hole)



PCB layout

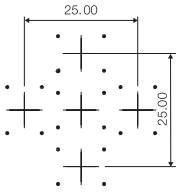
Dimensions 1ZC (SMD)



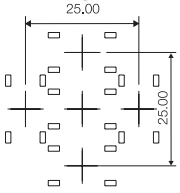
PCB layout

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

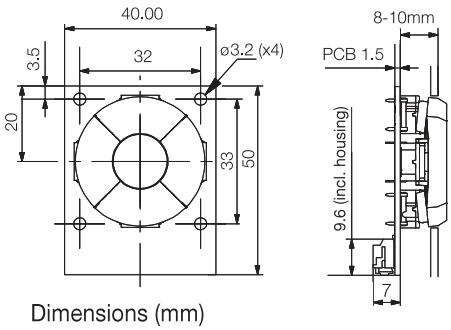
PCB layout TH



PCB layout SMD



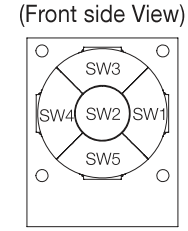
Dimensions Navimec™ Module

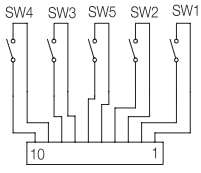


Dimensions (mm)

Circuit Diagram Navimec™ Module

(Front side View)





The plug on the Navimec™ 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.

How to order

3 A				
Switch	**Mounting** **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.	**Cap 1ZB**	**03** grey **06** white **09** black **30** ultra blue **40** dusty blue **42** aqua blue **50** metal dark blue **53** metal light grey **57** metal dark grey **58** metal bordeaux
3 F				
Switch	**Mounting** **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.	**Cap 1ZC**	

Navimec™ Module

Part No. 9508000 **Navimec™ Module excl. keycaps**
Part No. 950XXYY **Navimec™ Module incl. keycaps**
Part No. 9509XXXYYY **Navimec™ 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.

Ordering example: 4x3ATL6+1ZB53 and 1x3FTL6+1ZC58 or Navimec™ Module 9505358

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

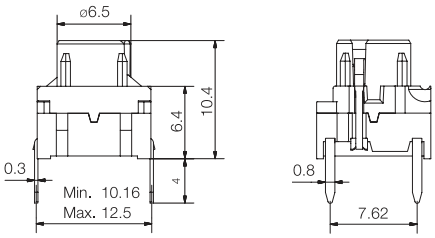
multimec®

illumec™ 4F

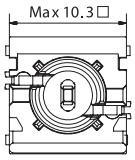
Technical Data

- 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

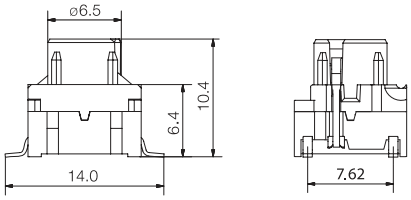
Dimensions (through-hole)



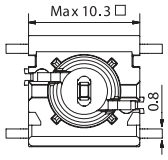
Top View



Dimensions (SMD)

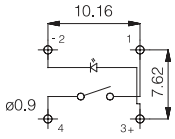


Top View

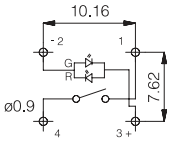


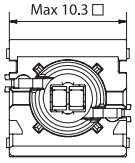
PCB layout and Circuit Diagram

1 LED



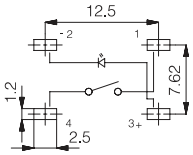
2 LEDS



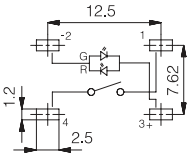


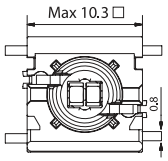
PCB layout and Circuit Diagram

1 LED



2 LEDS





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

How to order

4 F			+		
Switch	Mounting	LED	Illuminated Cap		
	SH9 surface mount	01		1D	
	TH9 through-hole	22		1K,1KB,1KC	
		42		1N	
		61		1S	
		82		1T	
		2242		1U	
		8222		1V	
		8242		1WA,1WD,1WP	
				1X	

Colour 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	Illuminated Caps	Lenses
01 blue	10 frosted blue	1 transparent
22 green	11 transparent	2 green
42 yellow	12 frosted green	4 yellow
61 white	14 frosted yellow	6 frosted white
82 red	16 frosted white	8 red
2242 green/yellow	18 frosted red	
8222 red/green		
8242 red/yellow		

Solid Colours

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

Dimensions

Caps	See Page
1D,1E,1F	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

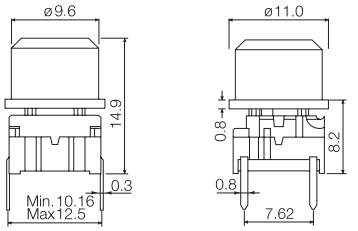
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® 3F + 1D/1E/1F

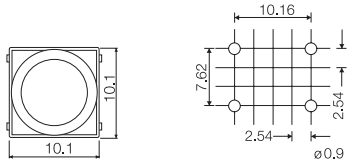
Technical Data

- 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

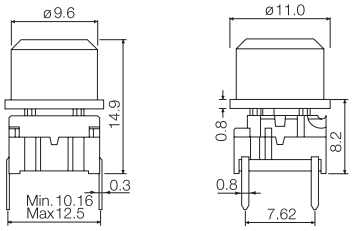
Dimensions (through-hole)

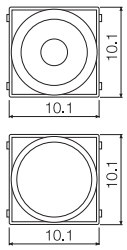


PCB layout

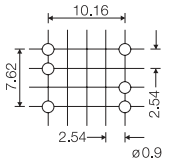


Dimensions (w/LED)

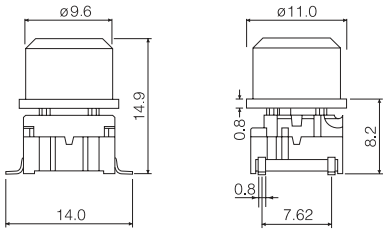




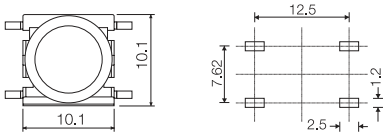
PCB layout
(top view)



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	**30** ultra blue	**50** metal dark blue
02 green	**40** dusty blue	**53** metal light grey
03 grey	**42** aqua blue	**57** metal dark grey
04 yellow	**32** mint green	**58** metal bordeaux
06 white	**33** tele grey	
08 red	**34** melon	
09 black	**38** noble red	

3 F — **Switch**

T — **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

00 blue	**1** transparent
02 green	**2** green
03 grey	**4** yellow
04 yellow	**6** frosted white
06 white	**8** red
08 red	
09 black	

Lens

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

Ordering example: 3FTL620 + 1E032

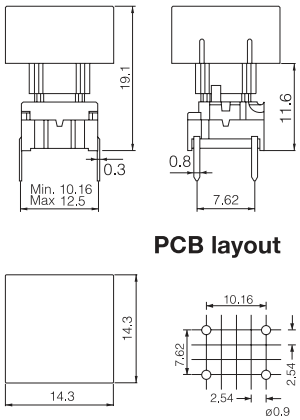
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® 3F + 1K/1KB/1KC

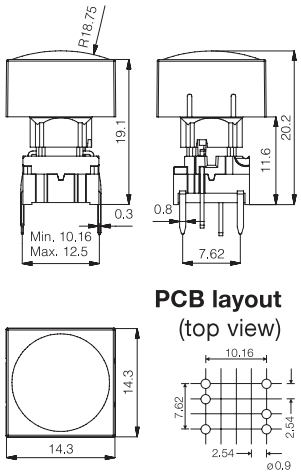
Technical Data

- 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

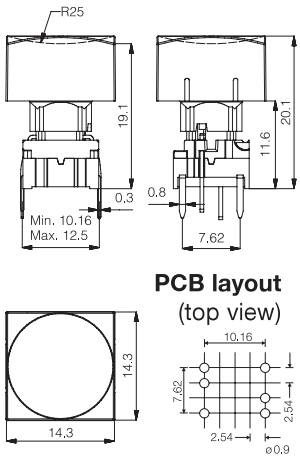
Dimensions 1K (through-hole)



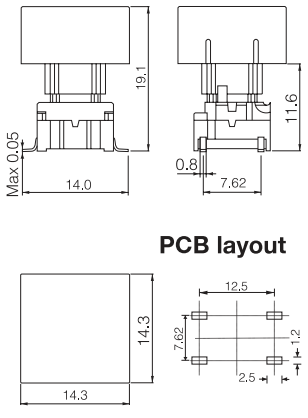
Dimensions 1KB (w/LED)



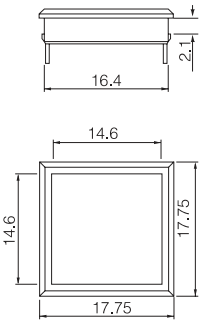
Dimensions 1KC (w/LED)



Dimensions 1K (SMD)



Dimensions (Bezel) (Optional)



How to order

3 F				1 K			1 6		2 K		
Switch	Mounting **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.	+	Cap	**00** blue **02** green **03** grey **04** yellow **06** white **08** red **09** black	+			Bezel	**03** grey **06** white **08** red **09** black	

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

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

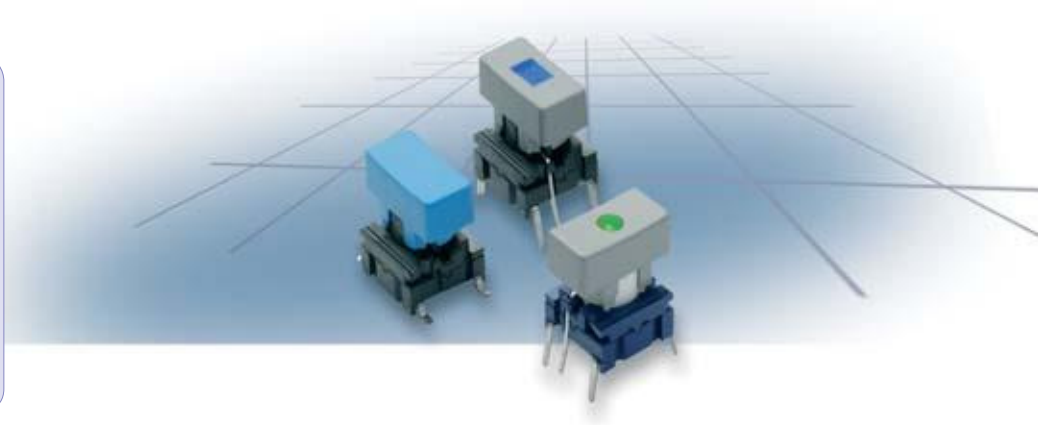
Ordering example: 3FTL688 + 1K1116

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

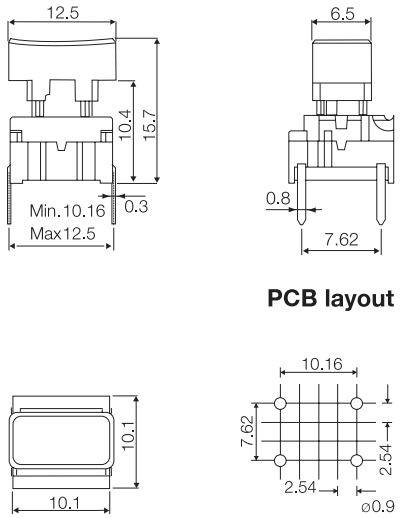
multimec® 3F + 1P/1Q/1R

Technical Data

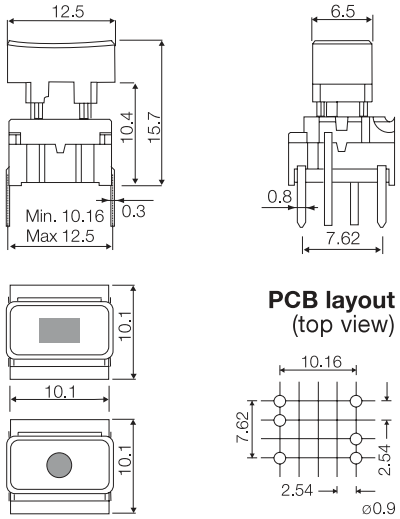
- through-hole or SMD
- 50mA/24VDC
- single pole/momentary
- 10.000.000 operations life time
- IP67 sealing
- temperature range:
  low temp: -40/+115°C
  high temp: -40/+160°C



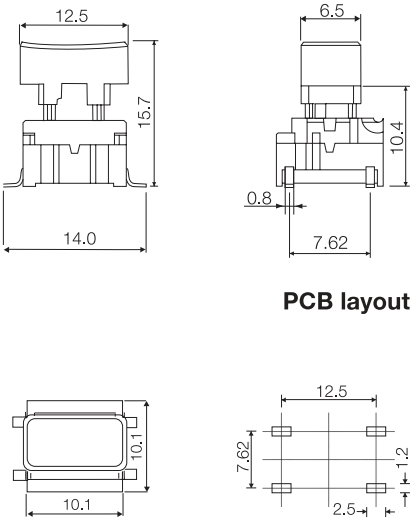
Dimensions (through-hole)



Dimensions (w/LED)



Dimensions (SMD)



How to order

3 F				1 P	
Switch	**Mounting** **T** through-hole **S** surface mount	**L 6** low temp. **H 9** high temp.	+	**Cap**	**00** blue **02** green **03** grey **04** yellow **06** white **08** red **09** black

3 F	T						
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	+	**1Q**	**00** blue **03** grey **08** red **09** black	**Lens** **1** transparent **6** frosted white
					1R		

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

Ordering example: 3FTL680 + 1Q091

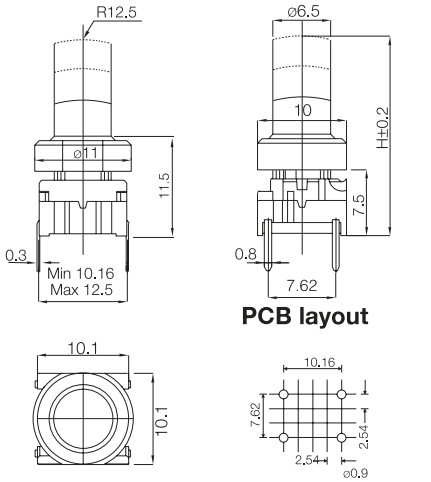
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® 3F + 1S + 2S

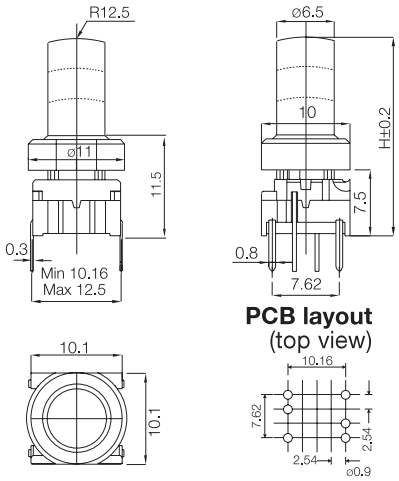
Technical Data

- 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

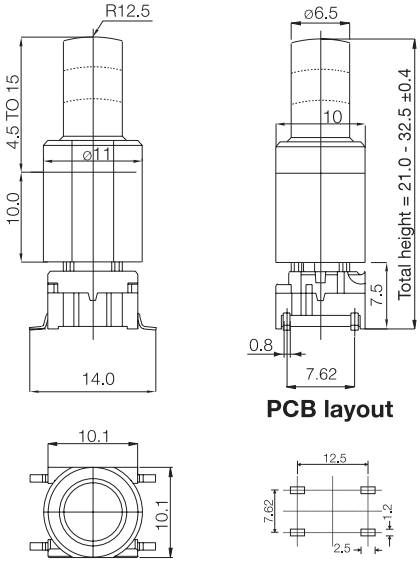
Dimensions (through-hole)



Dimensions (w/LED)

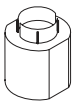


Dimensions (SMD)



How to order

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



3 F				+	1 S 1 1 -		.	
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 Transparent**			**Height** **16.0** **19.0** **22.5**

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 heigths 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

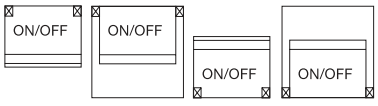
For updates of products and/or changes of specifications please see **www.mec.dk**

multimec® Legends

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.

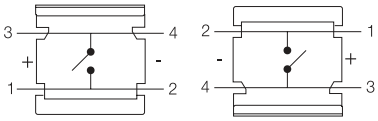
Note!

Position of Cap 1A/1B



UP 1A09XU | UP 1B09XU | DOWN 1A09XD | DOWN 1B09XD

Orientation of Switch for 1A/1B



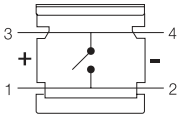
UP DOWN

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

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

Position of Cap 1D/1F

Orientation of Switch for 1D/1F



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

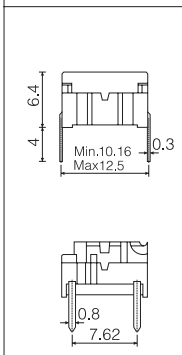
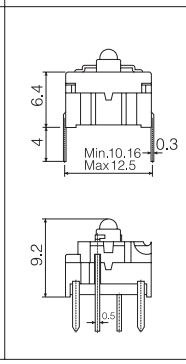
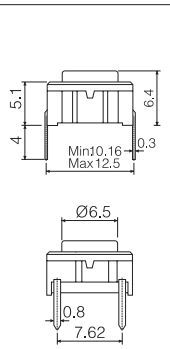
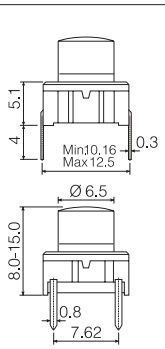
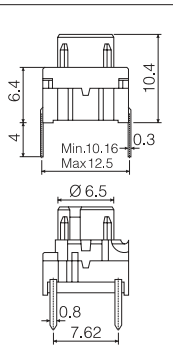
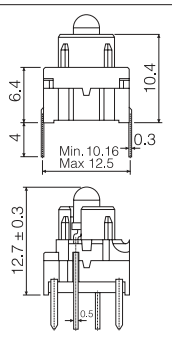
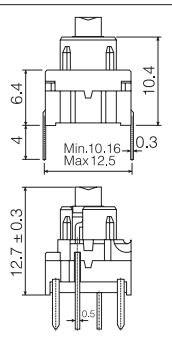
	Part no.							
LEGEND	1A09XU_	1A09XD_	1B09XU_	1B09XD_	1D09_	1F096_	1ZB09XD_	1ZC09_
0	000	000	000	000	000	000		
1	001	001	001	001	001	001		
2	002	002	002	002	002	002		
3	003	003	003	003	003	003		
4	004	004	004	004	004	004		
5	005	005	005	005	005	005		
6	006	006	006	006	006	006		
7	007	007	007	007	007	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 on1ZC16 for illumination

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

multimec® basic switch modules

Through-hole Versions

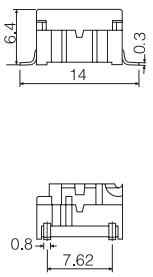
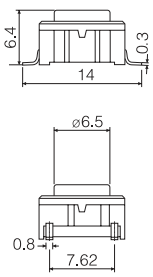
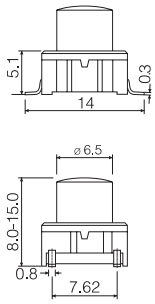
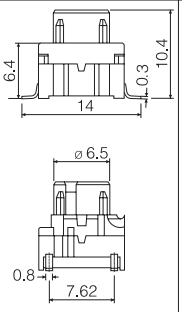
3A		3C	3E	3F		
For 1A/1B/1M/1ZA/1ZB	w/LED for 1C/1H		For 3E actuators/Varimec	For 1D/1K/1N/1P/1S/1T/ 1U/1V/1WA/1WD/1WG/ 1WP/1X/1ZC/1GA/1GC	w/LED for 1D/1E/1F/1N/1Q/1R/ 1S/1X	w/LED for 1K /1KB/1KC/1T/1U/1V/ 1WA/1WD/1WP
						

Standard Versions						
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

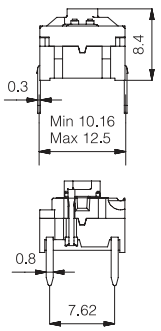
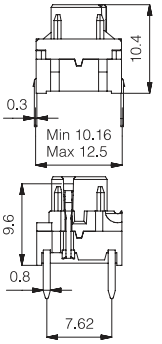
Surface Mount Versions

3A	3C	3E	3F
For 1A/1B/1M/1ZA/1ZB		For 3E actuators/ Varimec	For 1D/1K/1N/1P/1S/1T/ 1U/1V/WA/1WD/1WP/ 1X/1ZC/1GA/1GC
			

Standard Versions			
3ASH9/3ASH9R	3CSH9/3CSH9R	3ESH9/3ESH9R	3FSH9/3FSH9R

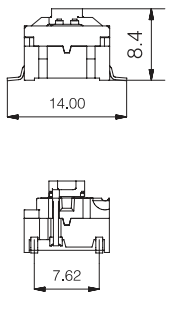
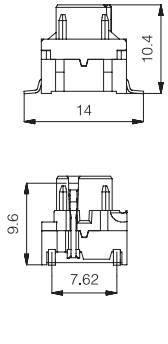
Co-planarity = ≤ 0.05

illumec™ Through-hole Versions

4AT w/LEDs	4FT w/LEDs
For 1C/1H	For 1D/1E/1F/1K/1KB/1KC/ 1N/1Q/1R/1S/1T/1U/1V/ 1WA/1WD/1WP/1X
	

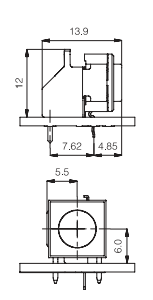
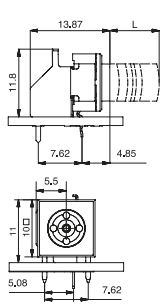
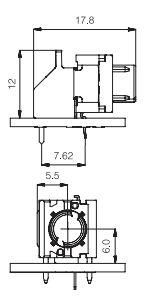
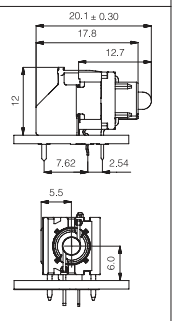
Standard Versions	
4ATH901/22/42/61/82/ 2242/8222/8242	4FTH901/22/42/61/82/ 2242/8222/8242

illumec™ Surface Mount Versions

4AS w/LEDs	4FS w/LEDs
For 1C/1H	For 1D/1E/1F/1K/1KB/1KC/ 1N/1Q/1R/1S/1T/1U/1V/ 1WA/1WD/1WP/1X
	

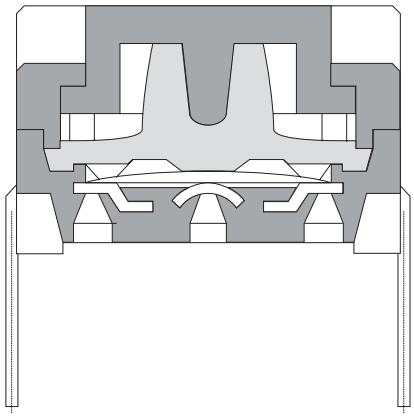
Standard Versions	
4ASH901/22/42/61/82/ 2242/8222/8242	4FSH901/22/42/61/82/ 2242/8222/8242

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/ 1WP1X/1ZC/1GA/1GC	For 1D/1E/1F/1N/1Q/ 1R/1S/1X
			

Standard Versions			
3CTL6RAS	3ETXX-X.XRAS	3FTL6RAS	3FTL600/20/40/60/80/ 2040/8020/8040RAS

multimec® Cross Section



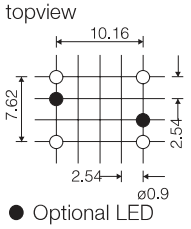
DIMENSIONS (mm) Unless otherwise specified, all tolerances ± 0.2

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

multimec® basic switches and tape & reel

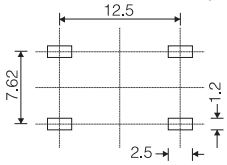
Recommended PCB layout

MULTIMEC®
topview

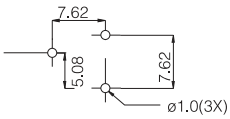


● Optional LED

MULTIMEC®
surface-mount solder pad

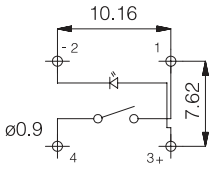


MULTIMEC®
Right Angle Version
topview

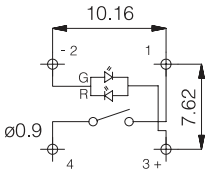


illumec™ PCB and Circuit Diagram

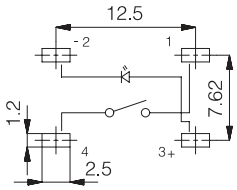
1 LED



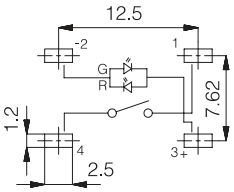
2 LEDS



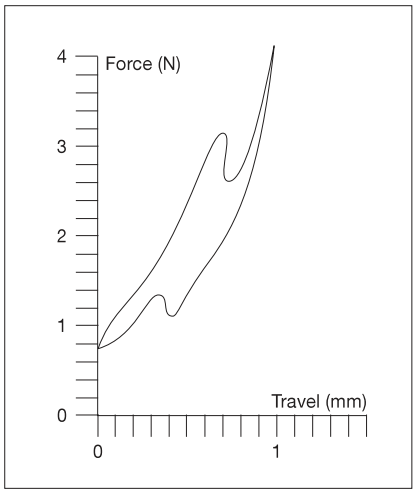
1 LED



2 LEDS



Operating Force
(typical example)



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

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

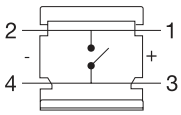
4F illumec™ tape & reel

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

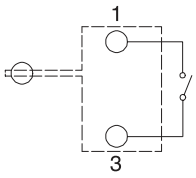
Specifications are according to EIA 600481-3 and IEC 60286-3

Circuit Diagram

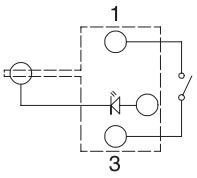
3A-3C-3E-3F



RAS

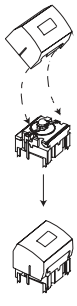


RAS w/LED

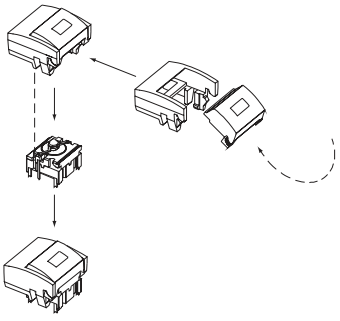


How to Assemble

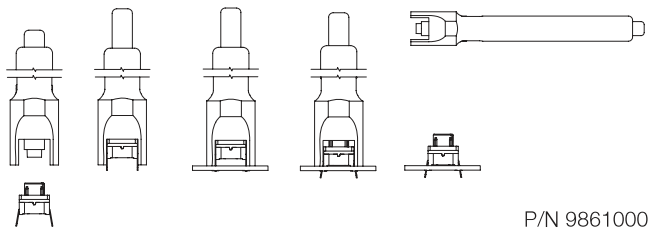
multimec®
3AT + 1A/H + 2A/B



multimec®
3AT + 1B/C + 2A/B



Mounting Tool for Through-hole versions



P/N 9861000

Specifications are subject to change without notice.

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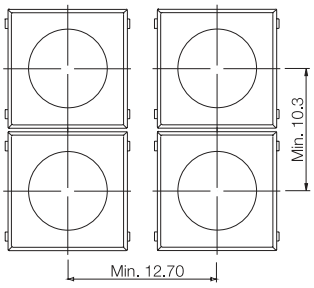
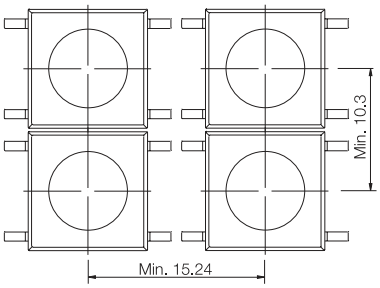
multimec® spacing

Basic switch spacing

through-hole

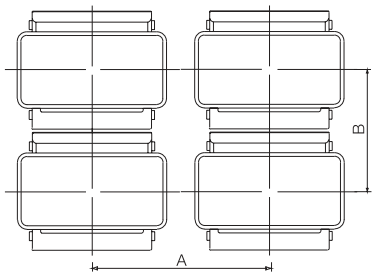


surface-mount

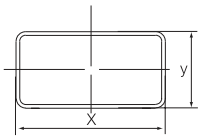


Recommended switch/cap spacing

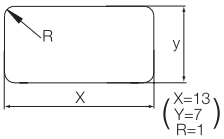
Switch spacing



Cap dimension

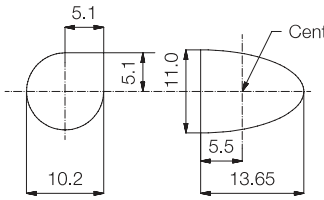


Panel cut-out

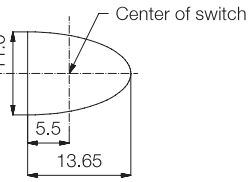


Panel Cut-out

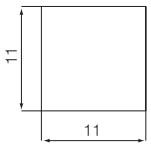
1N



1V



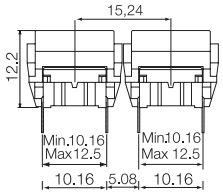
1T



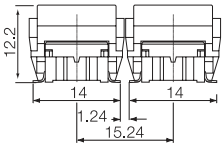
Spacing in mm

Spacing examples

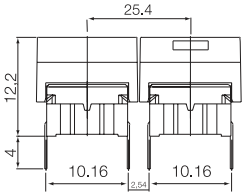
multimec®
3AT + 1B/C + 2A/B



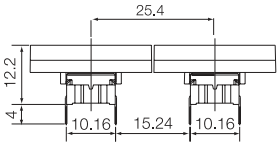
multimec®
3AS + 1B +2A/B
4AS +1B/1C + 2C/2D



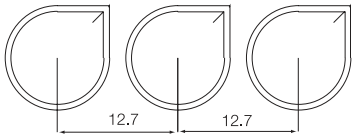
multimec®
3AT + 1A/H



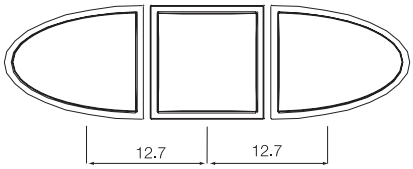
multimec®
3AT + 1M



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**

multimec® 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
Electrical Specifications						
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	
Mechanical Specifications						
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	
Temperature Range						
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*	
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.		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.	
Environmental Endurance IEC 68-2-3						
Temperature	+40°C		+40°C		+40°C	
Humidity	93% RH		93% RH		93% RH	
Duration	56 Days		56 Days		56 Days	
Temperature Cycling IEC 68-2-14						
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	
Vibration Test IEC 68-2-6						
Cycles					10	
Cycles time					2 hrs.	
Material Specifications - Switches						
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

Material Specifications - Caps & Bezels			
Material	**Parts**	**Temp limit**	**UL rating**
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
Legends Adhesion	ISO Class: 1/ASTM Class: 4B DIN EN ISO 2409		

* LED max. working temperature

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multimec® LEDs

For 3A switches		3AXXX (for 1C/1H)				2BXXX		
Colour		**B**	**G**	**Y**	**R**	**G**	**Y**	**R**
Colur Codes		00	20	40	80	20	40	80
Absolute Maximum Ratings	(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.		
Electrical-Optical Characteristics	(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 (V_R = 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
Luminous Intensity	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							

*/F = 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**
Colur Codes		00	20	40	60	80	2040	8020	8040	24	45	89
Absolute Maximum Ratings	(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.		
Electrical-Optical Characteristics	(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 (V_R = 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
Luminous Intensity	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.											

***/F = 50mA, ****Luminous Flux mlm

For 4A/4F switches		illumec™ LEDs specifications				
Colour		**B**	**G**	**Y**	**W**	**R**
Colur Codes		01	22	42	61	82
Absolute Maximum Ratings	(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.				
Electrical-Optical Characteristics	(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 (V_R = 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
Luminous Intensity	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
Specifications are subject to change without notice.

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