Quality is our forte

Located in Ballerup. Denmark, a suburb of Copenhagen MEC A/S has earned a reputation as a manufacturer of high quality switches in Europe MEC has achieved this through excellence of design and materials Our experienced personnel ensure that MEC products are always on the leading edge of technology and offer maximum reliability under all conditions Our quality assurance programmes maintain the consistently high quality found in all MEC products shipped For several years MEC has operated in accordance with ISO 9002 standards

MEC products are distributed world-wide through a network of more than 30 authorized national distributors

smta

ID INDUSTRIAL DESIGN AWARD

MEMBER

Design patented worldwide

Refer to pages 22 and 23 incorporating products using UNIMEC and MULTIMEC‾ switches in their designs.

PCB Mount Pushbutton Switches

Illuminated Pushbutton Switches

Surface Mount Switches

Toggle Switches

Toggle actuators may be assembled to provide either momentary or alternate action switches. Toggles and bezels are available in 10 colours.

Panel Mounting

Legends

Switches for Foil overlay

Customer satisfaction is the basic standard by which MEC judges its performance as a switch manufacturer. Our 100% inspection of all switch modules insures the high level of quality that our customers have come to expect from our UNIMEC and MULTIMEC switches. Our two lines of switches, both modular in design, have been designed to meet different electrical and mechanical specifications.

MEC specializes in the production of PC board mounted pushbutton switches. Our products are designed to be compatible with a wide variety of soldering methods such as wave, infrared and vapour phase soldering. Through the use of a modular approach to switch assembly the user is provided with a unique flexibility in his choice of options. The multi-coloured keycaps, bezels and LEDs snap together to produce almost limitless switch configurations.
Customized keycaps and bezels can be produced for specialized applications.

UNIMEC switches can be supplied with a variety of bezels which accommodate LED illumination. One or two large rectangular LEDs may be used in a bezel for maximum brightness or where pinpoint illumination is required; from one to four pin-head LEDs may be specified. MULTIMEC switches are available with LED illumination in both round and square cap configurations. Reverse printing is available for switches used in dead front panel applications where only the legend is to be illuminated. Several new illumination options have recently been added to the MULTIMEC switch line. Please see page 9 for details on the new 1C, 1H and 1K options.

MULTIMEC surface mount switches are compatible with the latest assembly techniques including vapour phase and infrared reflow soldering. MEC was one of the first manufacturers to produce a true SMT pushbutton switch. MULTIMEC switches employ high temperature plastics, silicone seals, ultrasonic welding and insert moulded terminals to produce switches sealed to IP-67M standards. Surface mount equivalents to all through-hole mounted MULTIMEC switches are available so that as requirements change a simple PC board change will allow the continued use of MULTIMEC switches.

The use of MULTIMEC switches under a foil overlay offers an attractive alternative to the traditional membrane switch. With a mechanical life of 10 million cycles per switch MULTIMEC will outperform membrane switches under the most extreme conditions. MULTIMEC switches can be specified with LED illumination to provide back lighting of the overlay for dead-front panel applications. A variety of PC board component heights can be matched with the 3ET switch which is available with overall heights ranging from 6.4mm to 16mm.
While MEC does not manufacture foil overlays our local distributors can help you locate sources of supply.

The Vario Support system makes panel mounting of the UNIMEC switch a snap. It provides precise alignment of all switches, prevents PC board damage from flexing due to excessive actuation force. The versatility and economy of the Vario Support mounting system is ideal for developing unique keypad assemblies.

A large selection of standard legends, numbers, letters and symbols are available on most UNIMEC and MULTIMEC caps. All marking is done using pad printing which deposits an ink onto the cap via a transfer process. The ink bonds with the plastic cap and produces a sharp durable legend without the rough surface associated with engraving or hot stamping.
Custom legends and ink colors are available on all caps and bezels. Contact your local distributor for lead times and additional information.
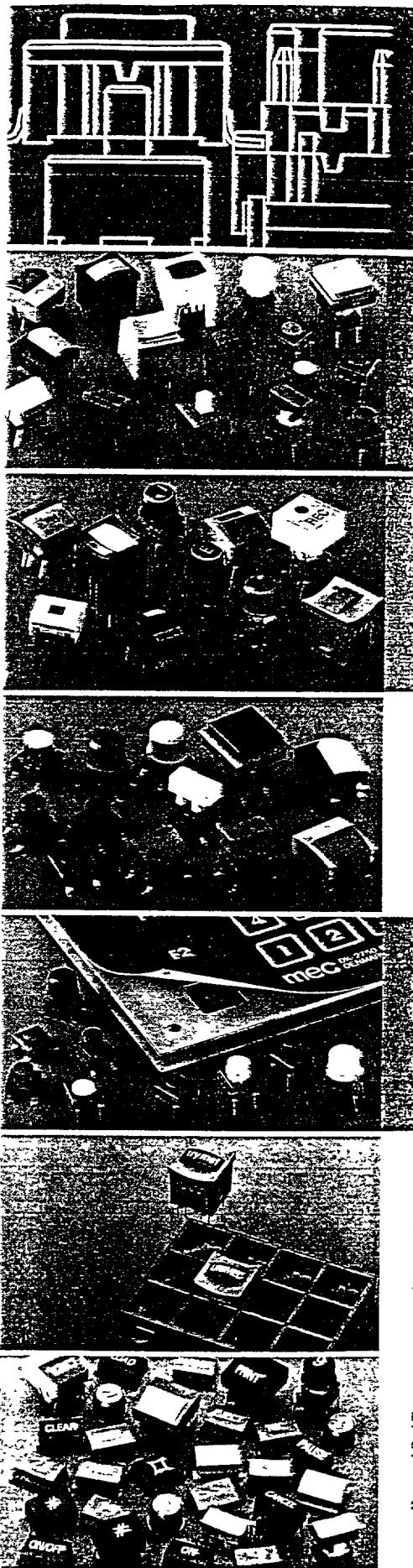
UNIMEC

UNIMEC is one of the smallest two pole switches available today. The contacts are capable of producing eight functions depending on PC board layout. The UNIMEC switch is available in momentary and alternate action models with standard silver contacts or optional gold contacts for low level switching. UNIMEC switches are known for their crisp audible tactile feel although a 'clickless' model is available for sensitive applications such as audio equipment. All UNIMEC switches are available in standard or high temperature models. Please refer to page 18 for specifications.

MULTIMEC®

Advanced sealing techniques and state of the art plastic materials are used to ensure maximum electrical and mechanical reliability, even in the most demanding environments. MULTIMEC'switches are available in either through-hole mounting or surface mount. Four basic switch modules provide the basis for assembly of a wide variety of options to produce both illuminated and non-illuminated switches. The versatility of the MULTIMEC' switches offers the designer great flexibility in creating unique front panel designs. A 1mm actuator travel combined with a 2.5N actuation force, (250g), provides a strong audible tactile feel throughout the 10 million cycle mechanical life of the switch. An increased actuation force is available as an option. All MULTIMEC' switches are sealed to IP-67M specifications and are available with either silver or optional gold contacts and in standard or high temperature models. Please see specifications on page 19 for further details.

Applications
page 22-23

Basic Switch Modules
# UNIMEC

Base module -
apppies to all versions
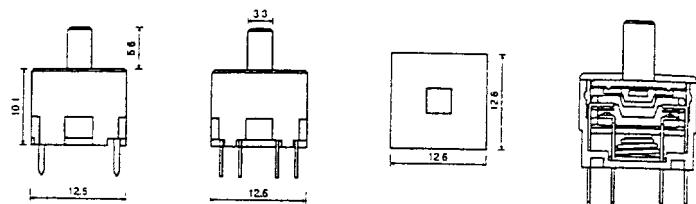
BASIC SWITCH CODES AND COLOUR OF ACTUATOR	MOMENTARY ACTION	ALTERNATE ACTION	CLICKLESS
Low Temperature Silver	15 501	15 551	15 500
Low Temperature Gold	15 502	15 552	
High Temperature Silver	15 401	15 451	
Identification of Switch	A	B	
High Temperature Gold	15 402	15 452	
Identification of Switch	C	D	
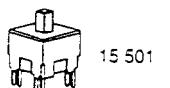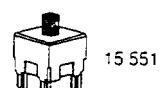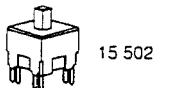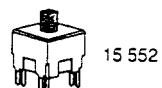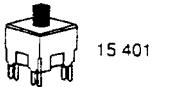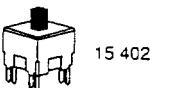
PCB Mounting Hole Dimensions

⊘ = 0.9

Circuit Diagram

Without LED

With round LED   With rect LED
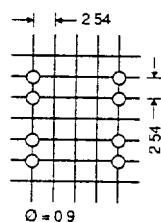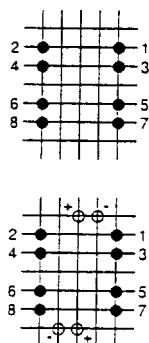
Operating Force
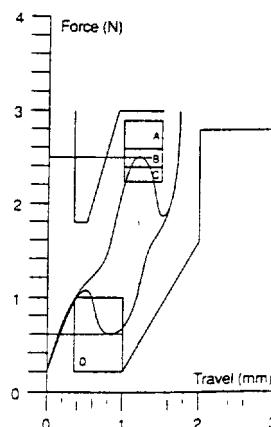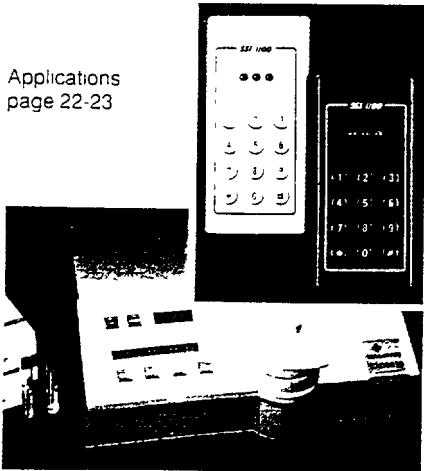
Wiring Diagram
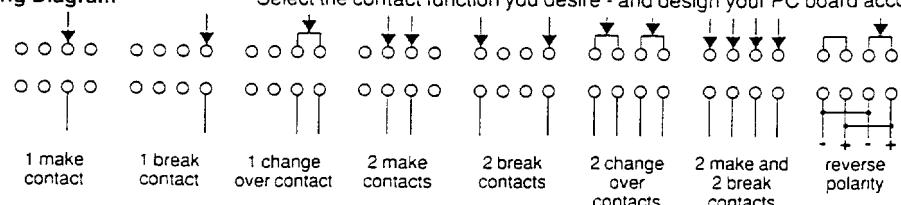
Select the contact function you desire - and design your PC board accordingly

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

See technical specifications - page 18

# Basic Switch Modules
MULTIMEC®

W/LED
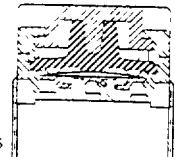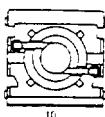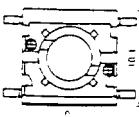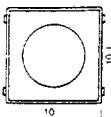
Base Module -
applies to all versions
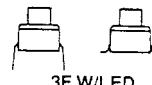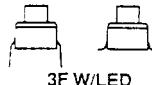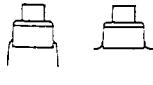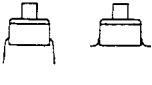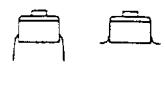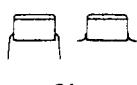
| 3A | 3A W/LED FOR 1C/1H | 3C | 3E * | 3F | 3F W/LED FOR 1E/1F | 3F W/LED FOR 1K | BASIC SWITCH |

DIMENSIONS (mm)
Unless otherwise specified all tolerances ± 0 1

* Standard heights 7 - 8 - 9 5 - 10 4 - 12mm
Other heights from 6 4 to 16mm available on request Please contact local distributor

							MOMENTARY
3ATL6	3ATL6__ 20-40-80	3CTL_ 0-2-3-4-6-8-9	3ETL9___*	3FTL6	3FTL6__ 20-40-80	3FTL6__ 22-44-88	Low Temp Silver
3ATL6G	3ATL6__G 20-40-80	3CTL_G 0-2-3-4-6-8-9	3ETL9G___*	3FTL6G	3FTL6__G 20-40-80	3FTL6__G 22-44-88	Low Temp Gold
3ATH9		3CTH9	3ETH9___*	3FTH9			High Temp Silver
3ATH9G		3CTH9G	3ETH9G___*	3FTH9G			High Temp Gold
							QUIET VERSION
3ATL6Q	3ATL6__Q 20-40-80	3CTL6Q	3ETL9Q___*	3FTL6Q	3FTL6__Q 20-40-80	3FTL6__Q 22-44-88	Low Temp Silver
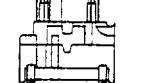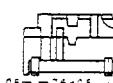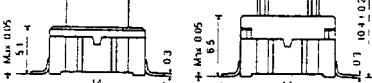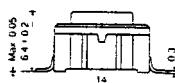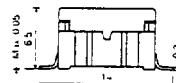
DIMENSIONS (mm)
Unless otherwise specified, all tolerances ± 0 1

					SURFACE MOUNT
3ASH9		3CSH9	3ESH9___*	3FSH9	High Temp Silver
3ASH9G		3CSH9G	3ESH9G___*	3FSH9G	High Temp Gold

## PCB Mounting Hole Dimensions
THROUGH-HOLE
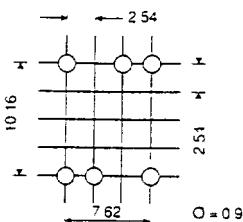
SURFACE MOUNT
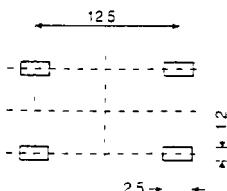
Circuit Diagram / LED Layout
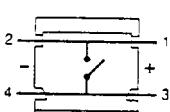
SWITCH CODE
T = Through-hole
S = Surface Mount
L = Low Temperature
H = High Temperature
G = Gold Contacts
Q = Quiet Version

COLOUR CHART

Actuator	LED
0 - Blue	20 22 - Green
2 - Green	40, 44 - Yellow
3 - Grey	80/88 - Red
4 - Yellow	
6 - White	
8 - Red	
9 - Black	

Operating Force
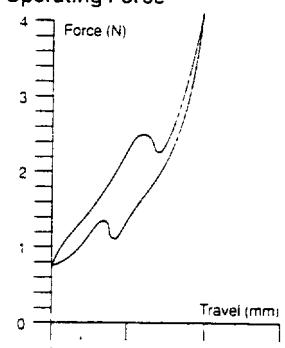
Every item is tested on the production line for contact resistance contact bounce and force/displacement characteristics

See also technical specifications - page 19

Reflow Soldering by Infrared Light
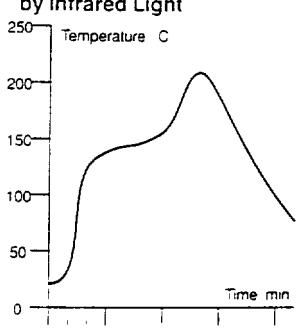
IR RTC SMD 624 B Belt speed 0 76 m/min
Temperature measured on printed circuit board

5

How to order

Select the desired switch model from the top row. The part numbers needed to build the switch are below the assembled switch. Select the colour code below the caps and bezels. Fill in the spaces noted by '__' to complete the part numbers. Refer to the switch code and the colour chart for code designation. For MULTIMEC switches silver contacts are standard. If MULTIMEC switches with gold contacts or quiet versions are required fill in G or Q after the switch part number. List part numbers separately when ordering. Switches are snipped unassembled. Assembly optional please contact your local distributor for details.

EXAMPLE UNIMEC switches.
15.501 + 16.30008 + 16.32406 + 16 270 = momentary switch silver + red cap + white extended bezel + extender.

EXAMPLE MULTIMEC® switches:
3ATL6 + 1B03 + 2A09 = 3A switch + grey cap + black bezel.

★Switch Code UNIMEC

15 501	Momentary - Silver
15 551	Alternate - Silver
15 502	Momentary - Gold
15 552	Alternate - Gold
15 500	Clickless - Silver
15 401	Momentary - Silver - High temperature
15 451	Alternate - Silver - High temperature
15 402	Momentary - Gold - High temperature
15 452	Alternate - Gold - High temperature

(See page 18 - technical specifications)

Switch Code MULTIMEC®

T = Through-hole
L = Low Temperature
H = High Temperature
G = Gold Contacts
Q = Quiet Version
(See page 19 - technical specifications)

Colour Chart

Caps and Bezels	MULTIMEC® Actuator 3C
00 - Blue	0 - Blue
01 - Brown	2 - Green
02 - Green	3 - Grey
03 - Grey	4 - Yellow
04 - Yellow	6 - White
05 - Golden	8 - Red
06 - White	9 - Black
07 - Orange	
08 - Red	
09 - Black	

Blanking cap

15 __ ★   15 __ ★   15 __ ★   15 __ ★   15 __ ★
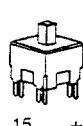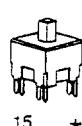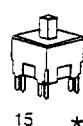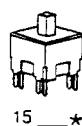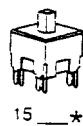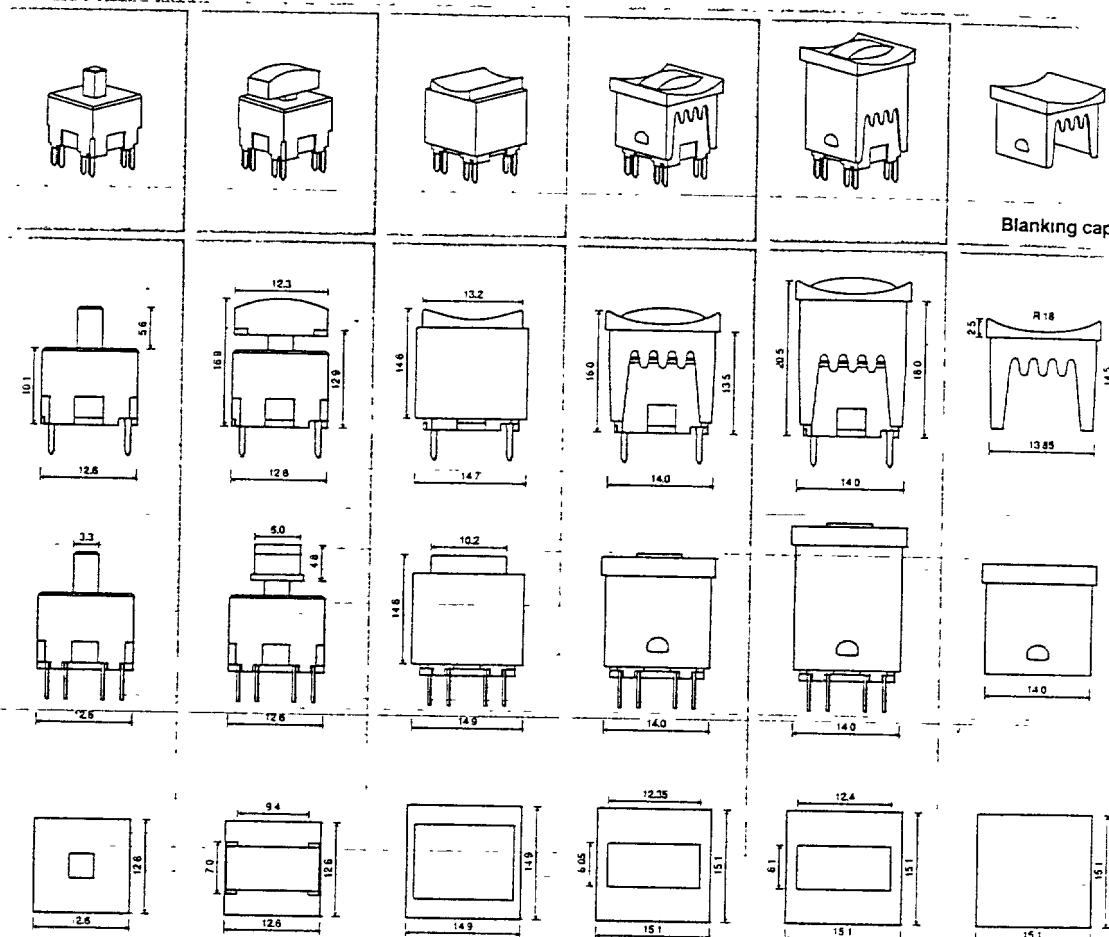
16 300__
00-01-02-03-04
05-06-07-08-09

16 700__
00-02-03-04-06
08-09

16 300__
00-01-02-03-04
05-06-07-08-09

16 300__
00-01-02-03-04
05-06-07-08-09

16 800__
Please ask for available colours

16 310__
00-01-02-03-04
05-06-07-08-09

16 324__
01-03-06-09
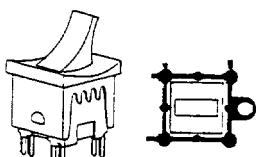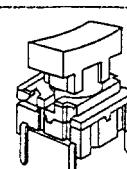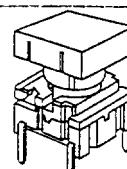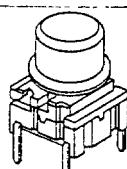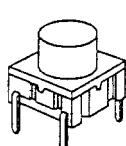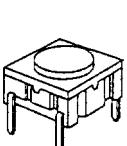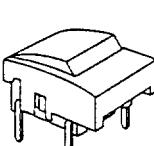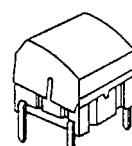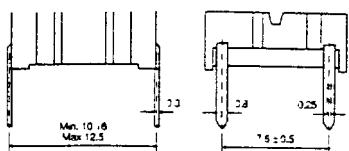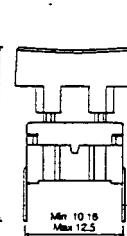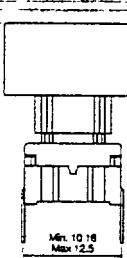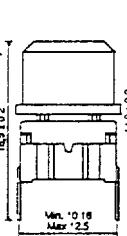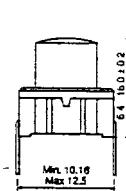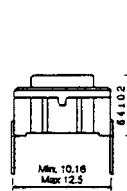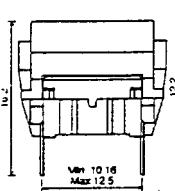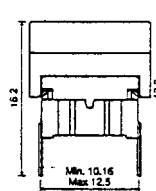
Toggle switches
- see page 12

Vario Support
- see page 14-15

16 270

PCB Mount Pushbutton Switches
MULTIMEC®

3A+1A	**3A+1B+2A**	**3C**	**3E ***	**3F+1D**	**3F+1K**	**3F+1P**	ASSEMBLED SWITCH

Min. 10.16 Max 12.5
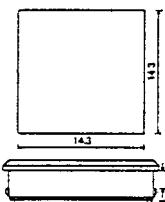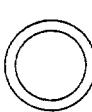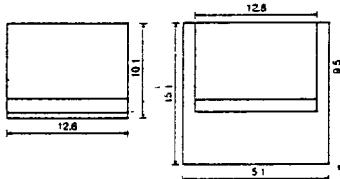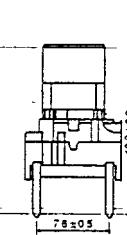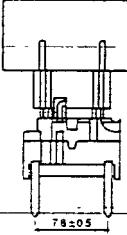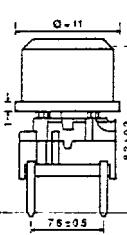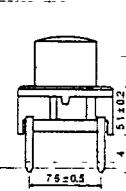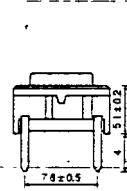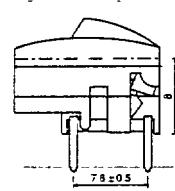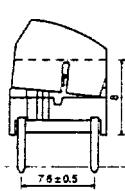
* Standard heights
7-8-9 5-10 4-12 mm
Other heights from
6.4 to 16mm
available on request.
Please contact local
distributor

PART NOS.

3ATH9 3ATL6	3ATH9 3ATL6	3CTH9 3CTL 0-2-3-4-6-8-9	3ETL9___ * 3ETH9___ *	3FTH9 3FTL6	3FTH9 3FTL6	3FTH9 3FTL6	SWITCH
1A__ 00-02-03-04-06 08-09	1B__ 00-02-03-04-06 08-09			1D__ 00-02-03-04-06 08-09	1K__ 16 00-02-03-04-06 08-09	1P__ 00-02-03-04-06 08-09	CAP
	2A__ 00-02-03-04-06 08-09				2K__ 03-06-08-09		BEZEL
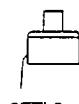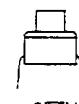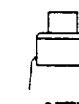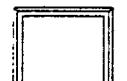
EXTENDER

7

How To Order

Select the desired switch model from the top row. The part numbers needed to build the switch are below the assembled switch. Select the colour code for the caps, bezels and LED's. Fill in the spaces noted by ___ to complete the part numbers. Refer to the switch code and the colour chart for code designation. For MULTIMEC switches silver contacts are standard. If MULTIMEC switches with gold contacts or quiet versions are required, fill in G or Q after the switch part number. List part numbers separately when ordering. Switches are shipped unassembled. Assembly optional, please contact your local distributor for details.

EXAMPLE UNIMEC switches:
15 501 + 16.30003 + 16 31200 + 1692008 = momentary switch silver + grey cap + blue bezel + red pinhead LED.

EXAMPLE MULTIMEC* switches:
3FTL622 + 1K1116 =
3F switch w/green LED + 1K clear cap incl. lens and reflector.

★ Switch Code UNIMEC

|	
15 501	Momentary - Silver
15 551	Alternate - Silver
15 502	Momentary - Gold
15 552	Alternate - Gold
15 500	Clickless - Silver
15 401	Momentary - Silver - High temperature
15 451	Alternate - Silver - High temperature
15 402	Momentary - Gold - High temperature
15 452	Alternate - Gold - High temperature

(See page 18 - technical specifications)

Switch Code MULTIMEC®

T = Through-hole
L = Low Temperature
H = High Temperature
G = Gold Contacts
Q = Quiet Version
(See page 19 - technical specifications)

Colour Chart

Caps and Bezels	Lenses and LEDs
00 - Blue	1 - Clear
01 - Brown	2/02/20/22 - Green
02 - Green	4/04/40/44 - Yellow
03 - Grey	8/08/80/88 - Red
04 - Yellow	
05 - Gold	
06 - White	
07 - Orange	
08 - Red	
09 - Black	
11 - Transp	
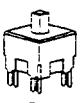
Toggle switches see page 12

Vario Support see page 14-15

15 ___ ★   15 ___ ★   15 ___ ★   15 ___ ★   15 ___ ★   15 ___ ★

16 300__	16 300__	16 300__	16 300__	16 300__	16 300__
00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09

16 311__	16 312__	16 314__	16 315__	16 325__	16 326__
00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	00-01-02-03-04 05-06-07-08-09	01-03-06-09	01-03-06-09

16 321__ 02-04-08	16 920__ 02-04-08	16 921__ 16 920__ 02-04-08 (1 of each required)	16 921__ 16 920__ 02-04-08 (2 of each required)	16 922__ 02-04-08	16 922__ 02-04-08 (2 required)
				16 270	16 270
				16 327__ 02-04-08	16 327__ 02-04-08 (2 required)

8

Illuminated Pushbutton Switches
MULTIMEC®

							ASSEMBLED SWITCH
3A+1H	3A+1C+2A	3A+1B+2B	3F+1E	3F+1D or 1F	3F+1K	3F+1F	DIMENSIONS (mm) Unless otherwise specified, all tolerances ±0.1

|							PART NOS.
3ATL6__ LED 20-40-80	3ATL6__ LED 20-40-80	3ATH9 3ATL6	3FTL6__ LED 20-40-80	3FTL6__ LED 20-40-80	3FTL6__ LED 22-44-88	3FTL6__ LED 20-40-80	SWITCH
1H__ Cap 00-02-03-04-06 08-09 Lens 1-2-4-8	1C__ Cap 00-02-03-04-06 08-09 Lens 1-2-4-8	1B__ 00-02-03-04-06 08-09	1E__ Cap 00-02-03-04-06 08-09 Lens 1-2-4-8	1D11 (Transparent) or 1F__ Cap 00-02-03-04-06 08-09 Lens 1-2-4-8	1K1116	1F096 Reverse Print See page 16 for standard legends	CAP
	2A__ 00-02-03-04-06 08-09	2B__ 00-02-03-04-06-08-09 Lens 1-2-4-8			2K__ 03-06-08-09		BEZEL
✦ 3ATL6 + 1CXXX_ 2-4-8	✦ 3ATL6 + 1CXXX_ 2-4-8	2BXXX_ 2-4-8	✦ 3FTL6 + 3FXXX__ 20-40-80	✦ 3FTL6 - 3FXXX__ 20-40-80	✦ 3FTL6 - 3FXXX__ 22-44-88	✦ 3FTL6 - 3FXXX__ 20-40-80	LED SWITCH AND LED UNASSEMBLED
							EXTENDER
			✦ High Temp Versions available on request				LENS

How To Order

Surface Mount Switches Multimec®

Select the desired switch model from the top row The part numbers needed to build the switch are below the assembled switch Select the colour code below the caps and bezels Fill in the spaces noted by ___ to complete the part numbers Refer to the switch code and the colour chart for code designation For MULTIMEC⁵ switches silver contacts are standard If MULTIMEC⁻ switches with gold contacts are required fill in G after the switch part number List part numbers separately when ordering Switches are shipped unassembled Assembly optional please contact your local distributor for details
EXAMPLE. 3ASH9 + 1B00 + 2A09 = 3A surface mount switch + blue cap + black bezel.

Switch Code MULTIMEC⁵

S = Surface Mount
H = High Temperature
G = Gold Contacts
(See page 19 - technical specifications)

Colour Chart

00 - Blue
02 - Green
03 - Grey
04 - Yellow
06 - White
08 - Red
09 - Black

✦ NOTE:Through-hole mount LED
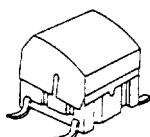
3A+1A
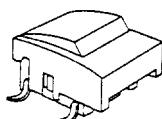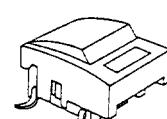
3A+1B+2A

3A+1B+2B
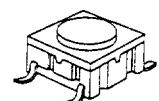
3C
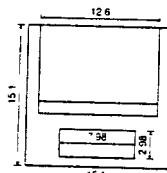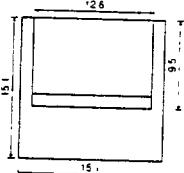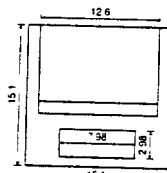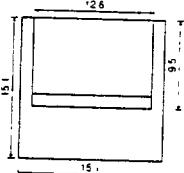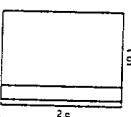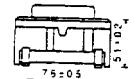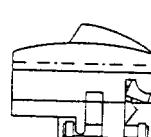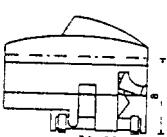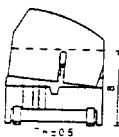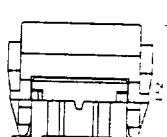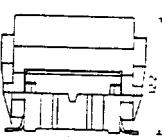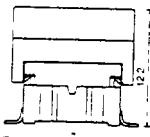
3ASH9

3ASH9

3ASH9

3CSH9

1A__
00-02-03-04-06
08-09

1B__
00-02-03-04-06
08-09

1B__
00-02-03-04-06
08-09

2A__
00-02-03-04-06
08-09

2B__
Bezel 00-02-03-04-06-08-09
Lens 1-2-4-8

✦ 2BXXX_
2-4-8

Surface Mount Switches
MULTIMEC®
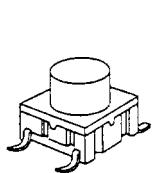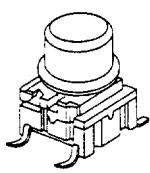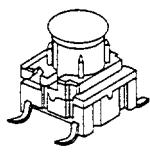
| 3E * | 3F+1D | 3F+1G | 3F+1K | 3F+1P | ASSEMBLED SWITCH |
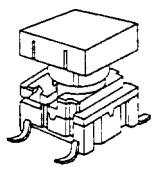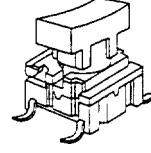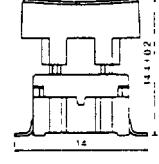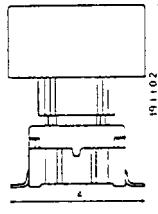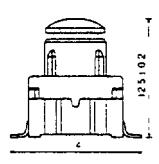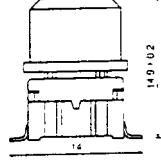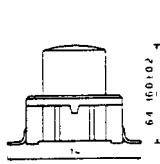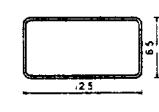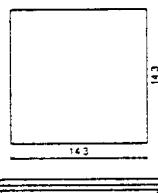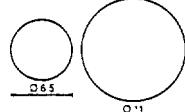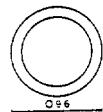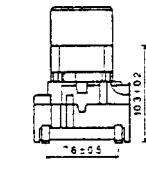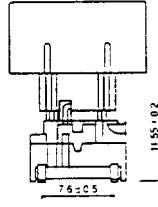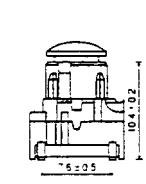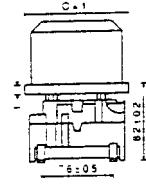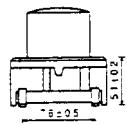
DIMENSIONS
(mm)
Unless otherwise
specified all
tolerances ±0 1

* Standard heights
7-8-9 5-10 4-12
mm Other heights
from 6 4 to 16mm
available on
request Please
contact local
distributor

PART NOS
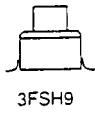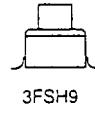
| 3ESH9___ * | 3FSH9 | 3FSH9 | 3FSH9 | 3FSH9 | SWITCH |

| | 1D__ 00-02-03-04-06 08-09 | 1G__ 1GU__ 06-09 06-09 (O = 6 4) (O = 11) | 1K__16 00-02-03-04-06 08-09 | 1P__ 00-02-03-04-06 08-09 | CAP |

| | | | 2K__ 03-06-08-09 | | BEZEL |

| | | | | | LED |
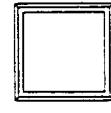
1

How To Order

Select the desired switch model from the top row. The part numbers needed to build the switch are below the assembled switch. Select the colour code below the levers, bezels and LED's. Fill in the spaces noted by __ to complete the part numbers. Refer to the switch code and the colour chart for code designation. List part numbers separately when ordering including assembly code. Switches are shipped preassembled.

NOTE: ONLY the momentary switch module is used to provide either momentary or alternate action toggle switches.

EXAMPLE: 15 501 + 16.552 + 16.55008 + 16.55503 + 1692108 + 9801010 = momentary switch silver + actuator + red lever + grey bezel + red LED assembled for alternate function.

Colour Chart

00 - Blue
01 - Brown
02 - Green
03 - Grey
04 - Yellow
05 - Golden
06 - White
07 - Orange
08 - Red
09 - Black

*Switch Code UNIMEC

15 501 Momentary - Silver
15 502 Momentary - Gold
(See page 18 - technical specifications)

Assembly Code UNIMEC Toggle Switches

9801000 - Assembly Momentary Function
9801010 - Assembly Alternate Function

Wire Support - see page 14-15

ASSEMBLED SWITCH

DIMENSIONS (mm): Unless otherwise specified, all tolerances ±0.1
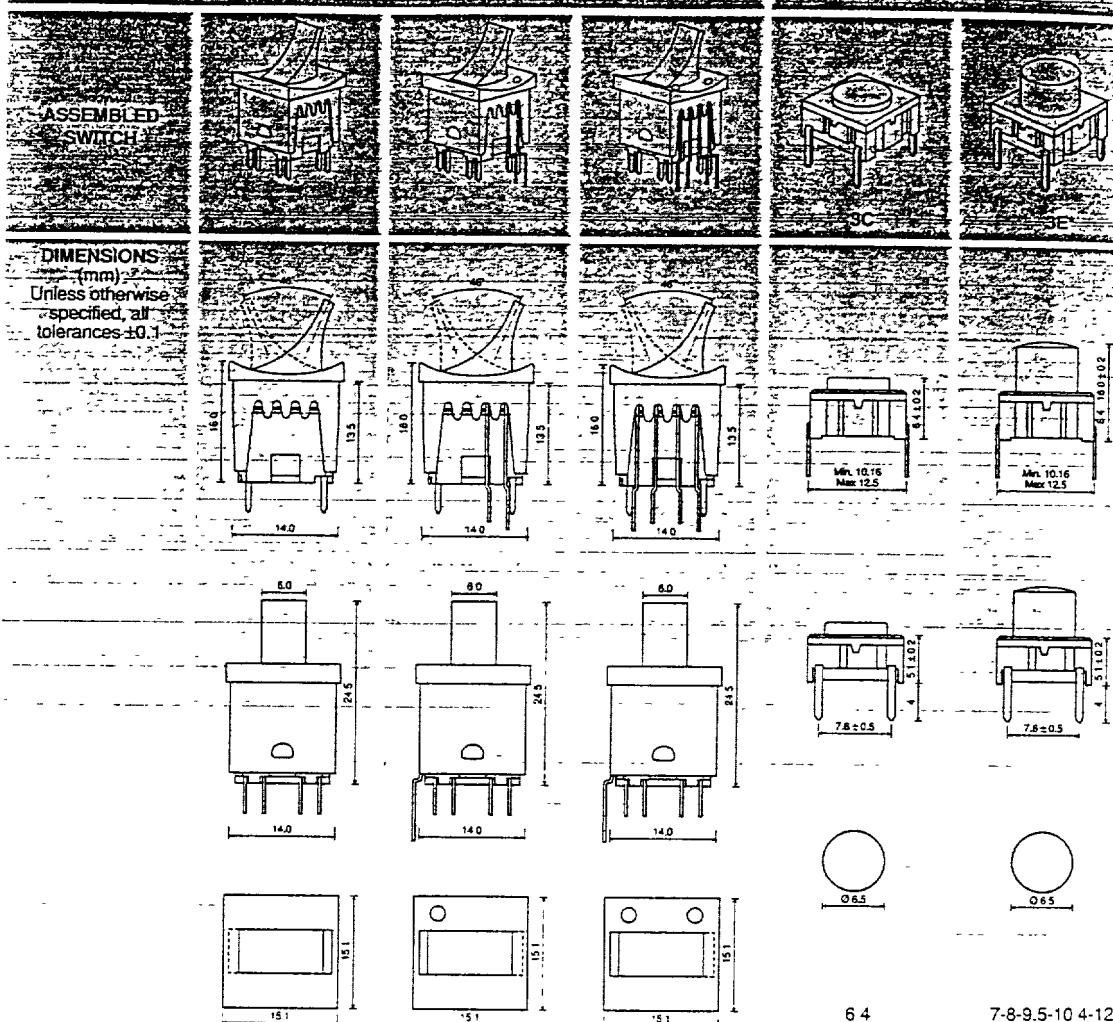
| PART NOS					
SWITCH	15 __ *	15 __ *	15 __ *	3CSH9 / 3CTH9 / → 3CTL_ 6-9	3ESH9 / 3ETH9 / 3ETL9
ACTUATOR	16 552	16 552	16 552		
LEVER	16 550 __ 00-01-02-03-04 05-06-07-08-09	16 550 __ 00-01-02-03-04 05-06-07-08-09	16 550 __ 00-01-02-03-04 05-06-07-08-09		
BEZEL	16 554 __ 00-01-02-03-04 05-06-07-08-09	16 555 __ 00-01-02-03-04 05-06-07-08-09	16 556 __ 00-01-02-03-04 05-06-07-08-09		
LED		16 921 __ 02-04-08	16 921 __ 16 920 __ 02-04-08		

Sideview
Example spacing - see page 20

How To Order

Select the desired switch model from the top row The part numbers needed to build the switch are below the assembled switch Select the height and colour code for the switches caps and LEDs Fill in the spaces noted by "__" to complete the part numbers Refer to the switch code and the colour chart for code designation For MULTIMEC switches silver contacts are standard If MULTIMEC' switches with gold contacts or quiet versions are required fill in G or Q after the switch part number List part numbers separately when ordering Switches are shipped unassembled Assembly optional please contact your local distributor for details

EXAMPLES MULTIMEC® switches for foil overlay:
3CTL6 = 3C through-hole switch with white actuator.
3ETL9-12 = 3E through-hole switch with black actuator and overall height of 12 mm.

Switch Code MULTIMEC
S = Surface Mount
T = Through-hole
L = Low Temperature
H = High Temperature
G = Gold Contacts
Q = Quiet Version
(See page 19 - technical specifications)

Colour Chart
Actuators
6 - White
9 - Black

Caps
06 - White
09 - Black
11 - Transparent

Lenses and LEDs
1   - Clear
20/22 - Green
40/44 - Yellow
80/88 - Red

✦ Other colours for actuators and caps available on request

★ High temperature versions available on request

ASSEMBLED SWITCH
3F-1D
3F-1D or 1F (illuminated)
3F-1G
3F-1K
3F-1K (illuminated)

DIMENSIONS (mm) Unless otherwise specified, all tolerances ±0.1

Min. 10 16 Max 12.5

Ø=11   Ø=11

Ø8.4

Ø6.5

Ø11

7.6±0.5   7.6±0.5

Ø9.8   Ø9.6

14.3   14.3

| 14.9 | 14.9 | 12.5 | 19 0 | 19 0 | OVERALL HEIGHT |

' 6 4 to 16mm available on request Please contact local distributor

PART NOS.
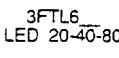
| 3FSH9 3FTH9 3FTL6 | 3FTL6__ LED 20-40-80 | 3FSH9 3FTH9 3FTL6 | 3FTL6 | 3FTL6__ LED 22-44-88 | SWITCH |

| ✦ 1D__ 06-09 | 1D11 1F091 | 1G__ 1GU__ 06-09 09 (O=6 4) (O=11) | ✦ 1K__16 06-09 | 1K1116 | CAP |

| ★ 3FTL6 + 3FXXX__ 20-40-80 | | | ★ 3FTL6 + 3FXXX__ 22-44-88 | SWITCH AND LED UNASSEMBLED |
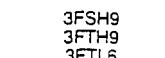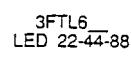
13

Vario Support
For all types of UNIMEC switches with bezels (16.700 cap not available)

16.410 (1x1)   16.411 (1x2)   16.412 (1x3)   16.413 (1x4)   16.414 (1x5)   16.415 (1x6)

16.420 (2x2)   16.421 (2x3)   16.422 (2x4)   16.423 (2x5)   16.424 (2x6)

16.430 (3x3)   16.431 (3x4)   16.432 (3x5)   16.433 (3x6)

16.440 (4x4)   16.441 (4x5)   16.442 (4x6)

16.450 (5x5)   16.451 (5x6)

16.460 (6x6)

16.490 (9x9)   16.491 (9x10)

16 500 (10x10)

14

16.416 (1x7)

16.417 (1x8)

16.418 (1x9)

16.419 (1x10)

16.425 (2x7)

16.426 (2x8)

16.427 (2x9)

16.428 (2x10)

16 434 (3x7)

16.435 (3x8)

16.436 (3x9)

16.437 (3x10)

16.443 (4x7)

16.444 (4x8)

16.445 (4x9)

16.446 (4x10)

16.452 (5x7)

16.453 (5x8)

16.454 (5x9)

16.455 (5x10)

16.461 (6x7)

16.462 (6x8)

16.463 (6x9)

16.464 (6x10)

16.470 (7x7)

16.471 (7x8)

16.472 (7x9)

16.473 (7x10)

16.480 (8x8)

16.481 (8x9)

16.482 (8x10)

Standard Keycap Legends
UNIMEC

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

Customized legends and colour combinations are available. contact your local distributor

| LEGEND	PART NO 18___	PART NO 18___	LEGEND	PART NO 18___	PART NO 18___	LEGEND	PART NO. 18___	PART NO. 18___
0	000	200	A	010	210	=	060	260
1	001	201	B	011	211	%	058	258
2	002	202	C	012	212	:	055	255
3	003	203	D	013	213	))	062	262
4	004	204	E	014	214	ON/OFF	017	217
5	005	205	F	015	215	STOP	018	218
6	006	206	G	063	263	START	031	231
7	007	207	H	064	264	FEED	032	232
8	008	208	I	065	265	REPEAT	035	235
9	009	209	J	066	266	CLEAR	036	236
10	020	220	K	067	267	LOAD	037	237
11	021	221	L	068	268	RESET	038	238
12	022	222	M	069	269	RUN	039	239
13	023	223	N	070	270	PRINT	040	240
14	024	224	O	071	271	CR	043	243
15	025	225	P	072	272	MANUAL	044	244
16	026	226	Q	073	273	HOLD	045	245
17	027	227	R	074	274	BYPASS	046	246
18	028	228	S	075	275	END	047	247
19	029	229	T	076	276	CANCEL	048	248
20	030	230	U	077	277	SUB.	049	249
21	083	283	V	078	278	CTRL.	050	250
22	084	284	W	079	279	ESC.	051	251
23	085	285	Z	080	280	CRE.	052	252
24	086	286	X	081	281	DSP.	053	253
25	087	287	Y	082	282	ENTER	105	305
26	088	288	#	107	307	SHIFT	106	306
27	089	289	*	019	219	ON	116	316
28	090	290	⊐	016	216	OFF	117	317
29	091	291	→	033	233			
30	092	292	←	133	333			
31	093	293	↑	034	234			
32	094	294	↓	134	334			
33	095	295	↵	135	335			
34	096	296	↑↓	115	315			
35	097	297	←→	041	241			
36	098	298	><	061	261			
37	099	299	+	054	254			
38	100	300	-	059	259			
39	101	301	•	056	256			
40	102	302	÷	057	257			

Legends

Standard Keycap Legends
MULTIMEC®

Part No.

LEGEND	1A09XU___	1A09XD___	1B09XU___	1B09XD___	1D09___	1F096___ Reverse Print
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		
E	014	014	014	014		
F	015	015	015	015		
#	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		
ON/OFF	017	017	017	017		
STOP	018	018	018	018		
START	031	031	031	031		
REPEAT	035	035	035	035		
CLEAR	036	036	036	036		
LOAD	037	037	037	037		
RESET	038	038	038	038		
PRINT	040	040	040	040		
MANUAL	044	044	044	044		
HOLD	045	045	045	045		
CANCEL	048	048	048	048		
ON	116	116	116	116		
OFF	117	117	117	117		

NOTE!

Position of Cap 1A 1B

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

UP   DOWN
Orientation of Switch for 1A/1B

For 1A/1B the orientation shown above is standard Please consider the switch orientation you require before specifying legend orientation.

Position of   Orientation of
Cap 1D 1F   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

Legends

Technical Specifications
UNIMEC Switches

| | | Low Temperature Versions | | High Temperature Versions | |
		Silver	Gold	Silver	Gold
Electrical Specifications					
Contact resistance		Max 100 mΩ (initially)			
Insulation resistance		>10MΩ			
Recommended load	min	0 5 mA	0 mA	0 5 mA	0 mA
	max	250 mA - 120 V - 9W AC - 6W DC			
Max current in non switching state		0 5 A			
Contact bounce		Max 10mS			
Dielectric strength between adjacent contacts		1000 V for 2 min			
Insulation resistance between adjacent contacts		$5 \times 10^{-3} \Omega$			
Capacitance between adjacent contacts		0 5 pF			
Mechanical Specifications					
Standard actuation force (switch)		$2 5N \pm^{0\,3}_{0\,2}$			
Max actuation force without cap		100N for 10 sec			
Key travel (switch)		1 8 mm			
Life time		Momentary 1 500 000 cycles Alternate 500 000 cycles		Momentary >10 000 000 cycles Alternate 5 000 000 cycles	
Temperature Range					
Working temperature		Min -25°C Max +75°C		Min -40°C Max +160°C	
Storage temperature		Min -65°C Max +85°C		Min -65°C Max +160°C	
Soldering IEC 68-2-20		Wave - max 260°C for max 10 Sec			
		Soldering iron - max 350°C for max 3 Sec Flux tight			
Environmental Endurance IEC 68-2-3					
Temperature		+40°C			
Humidity		93% RH			
Duration		56 Days			
Sealing IEC 529		IP-54			
Cleaning		Standard methods such as freon, water and soap (not immersed)			
Material Specifications - Switches					
Housing and actuator		Glass fiber filled Polycarbonate UL94V1		LCP UL94V0	
Switch spring		Stainless steel			
Key spring		Stainless steel			
Latch pin		Stainless steel			
Fixed contact		SNCU + 2uNi + 3uAG	SNCU + 2uNi + 3uAU	SNCU + 2uNi + 3uAG	SNCU + 2uNi + 3uAU
Moving contact		BeCu + 3uAG	BeCu + 3uAG + 3uAU	BeCu + 3uAG	BeCu + 3uAG + 3uAU
Contact lubricant		Special protective lubricant Kluber Barnerta I EL Fluid			
Material Specifications - Caps & Bezels		ABS UL94V1			
Temperature limit		Max +65°C			

UNIMEC LEDs

Part Nos.		16920/16.921			16922		
Colour (G = Green, Y = Yellow, R = Red)		G	Y	R	G	Y	R
Absolute Maximum Ratings	(Ta=25°C)						
Power	mW	100	100	100	135	135	135
Current forward	mA	30	30	30	30	30	30
Forward peak current	mA	50	50	50	90	90	90
Voltage reverse	V	5	5	5	5	5	5
Operating temperature	°C		-25 - +100			-55 - +100	
Storage temperature	°C		-25 - +100			-55 - +100	
Soldering temperature	°C		+ 245 for max 3 sec			+ 300 for max 3 sec	
Electrical-Optical Characteristics	(Ta=25°C)						
Voltage forward	Typ V	2 0	2 0	2 0	2 1	2 2	2 3
	Max V	3 0	3 0	3 0	3 0	3 0	3 0
Current reverse	uA	100	100	100	100	100	100
Wave length	nm	560	590	660	565	585	635
Spread	λ nm	10	10	10	10	10	10
Spread angle	degree	20	20	20	45	45	45
Luminous Intensity	Min mcd	1	1	0 8	1 5	2 5	2 5
	Typ mcd	2	3	1 6	2 5	3 0	5 0
Orientation		The longer pin is the anode the shorter is the cathode - see page 4 Circuit Diagram					

Technical Specifications
MULTIMEC® Switches

	Low Temperature Versions		High Temperature Versions	
	Silver	Gold	Silver	Gold
Electrical Specifications				
Contact resistance	<30 mΩ - typically 10mΩ			
Insulation resistance	>10MΩ			
Recommended load	0 5-50mA 24VDC	0-50mA 24VDC	0 5-50mA 24VDC	0-50mA 24VDC
Contact bounce	<2mS - typically 0 5mS			
Mechanical Specifications				
Standard actuation force (switch)	2 5 ±0 2N - (1 8 - 5N available on request)			
Max actuation force without cap	100N for 10 sec			
Key travel (switch)	1 mm			
Life time (switch)	>10 000 000 cycles			
Temperature Range				
Working temperature	Min -40°C Max +65°C		Min -40°C Max +160°C	
Storage temperature	Min -40°C Max +65°C		Min -40°C Max +160°C	
Soldering IEC 68-2-20	Wave -max 260°C for max 10 Sec		Infrared, vapour phase wave - max 260°C for max 30 Sec	
	Soldering iron - max 350°C for max 3 Sec Flux tight		Soldering iron - max 350°C for max 3 Sec Flux tight	
Environmental Endurance IEC-68-2-3				
Temperature	+40°C			
Humidity	93% RH			
Duration	56 Days			
Temperature Cycling IEC 68-2-14				
Temperature limit	Min -55°C - Max +65°C			
Number of cycles	200			
Exposure time at each temperature	10 min			
Recovery time before measurements	16 hrs			
Sealing IEC 529	IP-67M			
Cleaning	Standard methods such as freon, water and soap			
Material Specifications - Switches				
Housing	Polycarbonate UL94V1		PPS UL94V1	
Actuator	ABS UL94V1		PPS UL94V1	
Sealing + spring	Silicone rubber			
Contact spring	BeCu + 3uAG	BeCu + 3uAG + 3u AU	BeCu + 3uAG	BeCu + 3uAG + 3uAU
Terminals	SNCU + 2µNI + 3µAG	SNCU + 2µNI + 3uAU	SNCU + 2µNI + 3uAG	SNCU + 2µNI + 3µAU
Material Specifications - Caps & Bezels	ABS UL94V1			
Temperature Limit	Max +65°C			

MULTIMEC® LEDs

*I_F = 20mA
** Pulse width 1ms Duty cycle 1 5
***I_F = 50mA
****Luminous Flux mlm

| Part Nos.		1CXXX(for 3A Switch)			2BXXX			3FXXX(for 1E-1F)			3FXXX (for 1K)		
Colour (G = Green, Y = Yellow, R = Red)		G	Y	R	G	Y	R	G	Y	R	G	Y	R
Absolute Maximum Ratings	(Ta=25°C)												
Power	mW	100	60	100	75	60	60	70	60	60	300	300	300
Current forward	mA	30	20	30	20	20	20	20	20	20	75	90	90
Forward peak current	mA	120	80	120	60**	60**	60**	60**	60**	60**	2	2 5	2 5
Voltage reverse	V	5	5	5	3	3	3	3	3	3	5	5	5
Operating temperature	°C	-55 ~ +100			-25 ~ +85			-25 ~ +85			-55 ~ -100		
Storage temperature	°C	-55 ~ +100			-30 ~ +100			-30 ~ +100			-55 ~ +100		
Soldering temperature	°C	260 for max 3 sec			260 for max 5 sec			260 for max 5 sec			300 for max 3 sec		
Electrical-Optical Characteristics	(Ta=25°C)												
Voltage forward	Typ V	2 1*	2 1*	2 0*	2 1	2 1	2 0	2 1	2 1	2.0	2 4****	2 4****	2 4****
	Max V	2 8*	2 8*	2 8*	3 0	3 0	3 0	3 0	3 0	3.0	3 8****	3 8****	3 8****
Current reverse (V_R = 5V)	uA	100	100	100	10	10	10	10	10	10	10	10	10
Wave length	nm	565	585	630	563	585	650	563	585	650	565	586	635
Spread	∆nm	30	35	40	40	40	40	40	40	40	25	45	45
Spread angle	degree	90	90	90	45	45	45	45	45	45	55	30	55
Luminous Intensity	Min mcd	0 7	1 7	1 1	9 0	5 6	5 6	9 0	5 6	5 6	100****	100****	100****
	Typ mcd	2 5	5 6	3 7	25	16	16	25	16	16	160****	160****	160****
Orientation		The longer pin is the anode, the shorter is the cathode - see page 5 Circuit Diagram											

How To Assemble
Examples

UNIMEC Standard

2 54
2 54
Ø = 0 9

UNIMEC
15___ + 16300 + 16310

UNIMEC
15___ + 16270 + 16300 + 16324

MULTIMEC
Through-Hole

2 54
10 16
2 54
7 62
Ø = 0 9

MULTIMEC
Surface-Mount

12 5
7 62
1 2
2 5
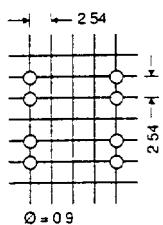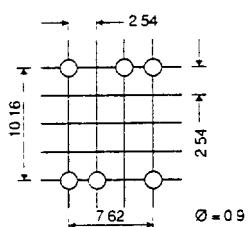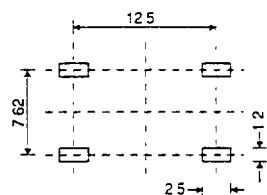
MULTIMEC
3AT + 1B/C + 2A/B

12 2
Min 10 16
Max 12 5
Min 10 16
Max 12 5
10 16   5 08   10 16
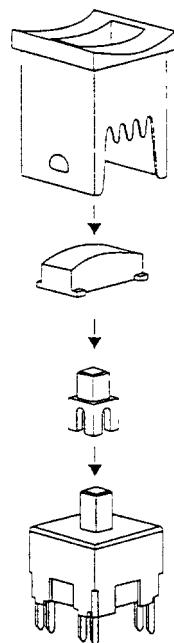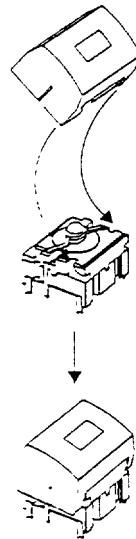
MULTIMEC
3A + 1A/H

MULTIMEC
3A + 1B/C + 2A

MULTIMEC
3AS + 1B/C + 2A/B

12 2
14   14
1 24
15 24

MULTIMEC
3C

15 24   10 16
15 24
7 62 7 62
55 8
71 5

MULTIMEC
1K Cap

MULTIMEC
3F + 1K + 2K

20