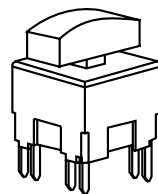


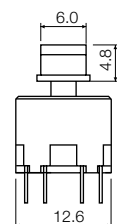
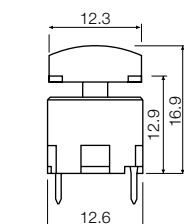
unimec 16300/16700/16800



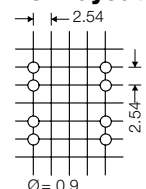
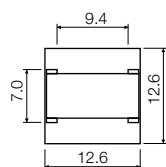
Technical Data:

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

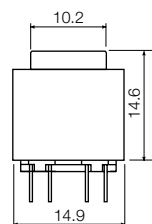
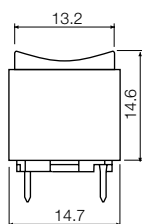
Dimensions 16300:



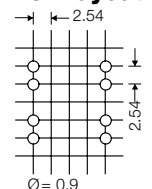
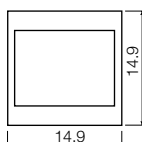
PCB layout



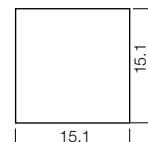
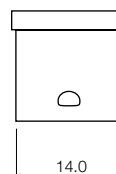
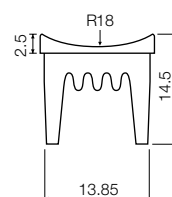
Dimensions 16700:



PCB layout



Dimensions 16800:



Blanking Cap
to be used with
VARIO SUPPORT

HOW TO ORDER

1 5

+

1 6 3 0 0



Switch

- 15501** mom. silver
- 15551** alt. silver
- 15502** mom. gold
- 15552** alt. gold
- 15500** silent silver
- 15401** mom. silver
high temp.
- 15451** alt. silver
high temp.

Cap



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

- 30** ultra blue
- 40** dusty blue
- 42** aqua blue
- 32** mint green
- 33** tele grey
- 34** melon
- 38** noble red

- 50** metal dark blue
- 53** metal light grey
- 57** metal dark grey
- 58** metal bordeaux

1 5

+

1 6 7 0 0

Switch



Cap



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

1 6 8 0 0

Blanking Cap



- 00** blue
- 01** brown
- 02** green
- 03** grey
- 04** yellow
- 05** golden
- 06** white
- 07** orange
- 08** red
- 09** black
- 11** transparent
- 12** transparent green
- 14** transparent yellow
- 18** transparent red

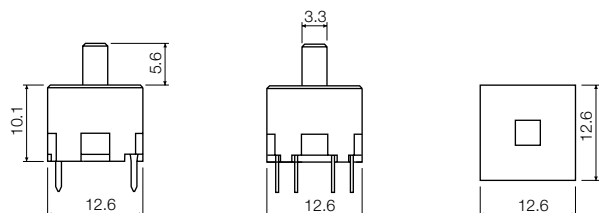
Ordering example: 15551 + 1670009

mec · Industriparken 23 · P.o. Box 26 · DK-2750 Ballerup · Denmark

Tel.: +45 44 97 33 66 · Fax: +45 44 68 15 14 · Web: www.mec.dk · E-mail: danmec@mec.dk

unimec basic switch modules

Base module applies to all versions



Part no.



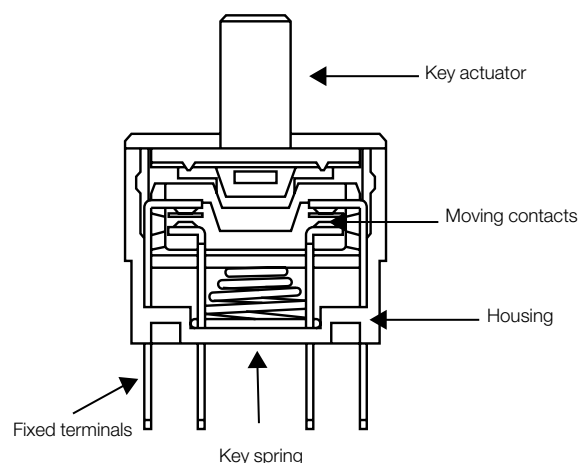
Temperature:
5: low temp.
4: high temp.

Switch function:
0: momentary
5: alternate

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

Standard stock items: 15501 - 15551

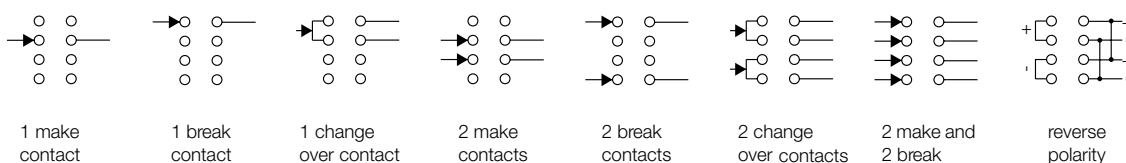
Other versions: 15401 - 15451 - 15452 - 15502 - 15552 - 15500



PCB Mounting Hole Dimensions Basic Switch	Circuit diagram	PCB Mounting hole Dimensions (w/Extender 16250)	Functional diagram

Wiring Diagram

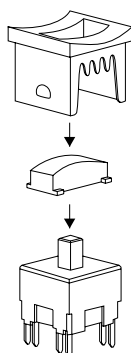
Select the contact function you desire - and design your PC board accordingly



How to assemble

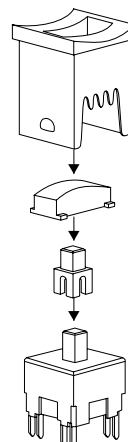
unimec

15XXX + 16300 +
16310

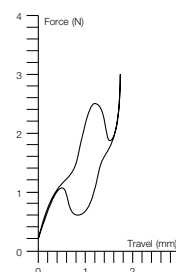


unimec

15XXX + 16270 +
16300 + 16324



Operating Force
(Typical example)



		Low Temperature Versions		High Temperature Versions		
		Silver	Gold		Silver	Gold
Electrical Specifications						
Contact resistance		Max. 100 mΩ (initially)				
Insulation resistance		>10M Ω				
Recommended load	min.	0.5 mA	0,5 μA		0.5 mA	0,5 μA
	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 X 10 ¹³ Ω				
Capacitance between adjacent contacts		0.5 pF				
Mechanical Specifications						
Standard actuation force (switch)		typ 2.5N				
Max. actuation force without cap		100N for 10 sec.				
Key travel (switch)		1.8 mm				
Life time		Momentary 1.500.000 cycles			Momentary >10.000.000 cycles	
		Alternate 500.000 cycles			Alternate 5.000.000 cycles	
Temperature Range						
Working temperature		Min. -40°C Max. +75°C			Min. -40°C Max. +160°C	
Storage temperature		Min. -65°C Max. +85°C			Min. -65°C Max. +160°C	
Soldering IEC 68-2-20		Wave - max. 260°C for max. 10 sec., please refer to usage guidelines				
		Soldering iron - max. 350°Cfor 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			PPS UL94V0	
Switch spring		Stainless steel				
Key spring		Stainless steel				
Latch pin		Stainless steel				
Fixed contact		SnCu + 2μNi + 3μAg	SnCu + 2μNi + 3μAu		SnCu + 2μNi + 3μAg	SnCu + 2μNi + 3μAu
Moving contact		Stainless steel + 3μAg	Stainless steel + 3μAg+1μAu		Stainless steel + 3μAg	Stainless steel + 3μAg+1μAu
Contact lubricant		Special protective lubricant Klüber Barrierta I EL Fluid				
Material Specifications - Caps & Bezels		ABS (standard) UL94HB				
Temperature limit		Max. +65°C				
Tampon Printing		According to ISO Class.: 1/ ASTM Class.: 4B				

Specifications are subject to change without notice

unimec LEDs

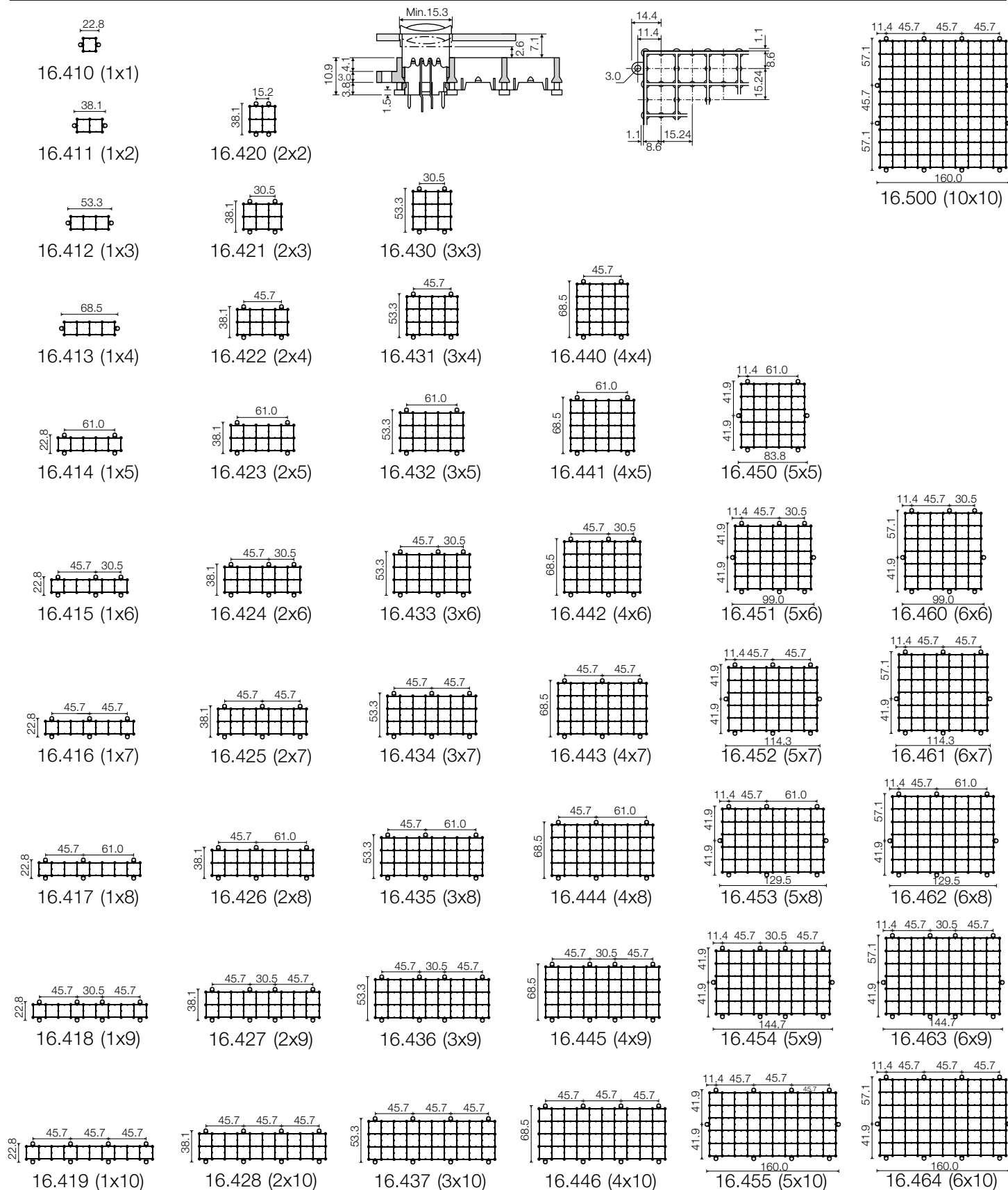
** Pulse width 1ms Duty cycle 1:5

***I_F = 50mA

**** Luminous Flux mlm

Part Nos.		16920/16921			16922			16923			16924		
Colour (G = Green, Y = Yellow, R = Red)		G	Y	R	G	Y	R	G	Y	R	G	Y	R
Colour Codes		02	04	08	02	04	08	20	40	80	22	44	88
Absolute Maximum Ratings (Ta=25°C)													
Power	mW	100	100	100	135	135	135	70	60	60	300	300	300
Current forward	mA	30	30	30	30	30	30	20	20	20	75	90	90
Forward peak current	mA	50	50	50	90	90	90	60**	60**	60**	2	2.5	2.5
Voltage reverse	V	5	5	5	5	5	5	3	3	3	5	5	5
Operating temperature	°C	-25 - +100			-55 - +100			-25 ~ +85			-55 ~ +100		
Storage temperature	°C	-25 - +100			-55 - +100			-30 ~ +100			-55 ~ +100		
Soldering temperature	°C	+ 245 for max. 3 sec.			+300 for max. 3 sec.			260 for max. 5 sec.			300 for max. 3 sec.		
Electrical-Optical Characteristics (Ta=25°C)													
Voltage forward	Typ. V	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.1	2.0	2.4***	2.4***	2.4***
	Max. V	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.8***	3.8***	3.8***
Current reverse	μA	100	100	100	100	100	100	10	10	10	10	10	10
Wave length	nm	560	590	660	565	585	635	563	585	650	565	586	635
Spread	Ønm	10	10	10	10	10	10	40	40	40	25	45	45
Spread angle	degree	20	20	20	45	45	45	45	45	45	55	30	55
Luminous Intensity													
	Min. mcd	1	1	0.8	1.5	2.5	2.5	9.0	5.6	5.6	100****	100****	100****
	Typ. mcd	2	3	1.6	2.5	3.0	5.0	25	16	16	160****	160****	160****
Orientation	The longer pin is the anode, the shorter is the cathode.												

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



Existing and New Part Nos. for Lead Free, RoHS compatible and Proces compatible mec products

MULTIMEC

Part No.	Part Name	Lead Free	RoHS Comp.	Proces Comp.	New Part No. Comments	Lead Free	RoHS Comp.	Proces Comp.	UL
3ASH9	Switch Surface Ag/High Temp	N	N	Y	RA3ASH9	Y	Y	Y	V0
3AXXXG	All 3A Switches with Au	N	N	Y	RA3AXXXG	Y	Y	Y	V0
3AXXXQ	All 3A Quiet Switches	N	N	Y	RA3AXXXQ	Y	Y	Y	VO
3ASH9R	All 3A Switches delivered on Tape	N	N	Y	RA3ASH9R	Y	Y	Y	V0
3ATH9	Switch Th Ag/High Temp.	N	N	Y	RA3ATH9	Y	Y	Y	V0
3ATL6	Switch Th Ag/White But/Low Temp.	N	N	Y	RA3ATL6	Y	Y	Y	V0
3ATL6 w/LED	Switch Th Ag/Low Temp w/LED	N	N	Y	RA3ATL6 w/LED	Y	Y	Y	V0
3CSH9	Switch Surface Ag/High Temp.	N	N	Y	RA3CSH9	Y	Y	Y	V0
3CXXXG	All 3C Switches with Au	N	N	Y	RA3CXXXG	Y	Y	Y	V0
3CXXXQ	All 3C Quiet Switches	N	N	Y	RA3CXXXQ	Y	Y	Y	V0
3CSH9R	All 3C Switches delivered on Tape	N	N	Y	RA3CSH9R	Y	Y	Y	V0
3CTH9	Switch Th Ag/High Temp	N	N	Y	RA3CTH9	Y	Y	Y	V0
3CTL6	Switch Th/White But/Low Temp	N	N	Y	RA3CTL6	Y	Y	Y	V0
3CTL6-2SL	Switch Low Temp. 2 Straight Legs	N	N	Y	RA3CTL6-2SL	Y	Y	Y	V0
3CTL6RAS	Right Angle Switch Low Temp.	N	N	Y	RA3CTL6RAS	Y	Y	Y	V0
3CTL9	Switch Th Ag/Black But/Low Temp	N	N	Y	RA3CTL9	Y	Y	Y	V0
3ESH9	Switch Surface Ag High Temp.	N	N	Y	RA3ESH9	Y	Y	Y	V0
3ESH9-XX.X	Switch Ag/High Temp./w Actuator	N	N	Y	RA3ESH9-XX.X	Y	Y	Y	V0
3EXXXG	All 3E Switches with Au	N	N	Y	RA3EXXXG	Y	Y	Y	V0
3EXXXQ	All 3E Quiet Switches	N	N	Y	RA3EXXXQ	Y	Y	Y	V0
3ESH9R	All 3E Switches delivered on Tape	N	N	Y	RA3ESH9R	Y	Y	Y	V0
3ETH9	Switch Th Ag High Temp.	N	N	Y	RA3ETH9	Y	Y	Y	V0

3ETH9-XX.X	Switch Th Ag/High Temp. w/Actuator	N	N	Y	RA3ETH9-XX.X	Y	Y	Y	V0
3ETL9	Switch Th Ag/Low Temp.	N	N	Y	RA3ETL9	Y	Y	Y	V0
3ETL9-XX.X	Switch Th Ag/Low Temp. w/Actuator	N	N	Y	RA3ETL9-XX.X	Y	Y	Y	V0
3FSH9	Switch Surface Ag/High Temp.	N	N	Y	RA3FSH9	Y	Y	Y	V0
3FXXXG	All 3F Switches with Au	N	N	Y	RA3FXXXG	Y	Y	Y	V0
3FXXXQ	All 3F Quiet Switches	N	N	Y	RA3FXXXQ	Y	Y	Y	V0
3FSH9R	All 3F Switches delivered on Tape	N	N	Y	RA3FSH9R	Y	Y	Y	V0
3FTH9	Switch Th Ag/High Temp.	N	N	Y	RA3FTH9	Y	Y	Y	V0
3FTH9 w/LED	Switch Th High Temp w/ LED	N	N	Y	RA3FTH9 w/LED	Y	Y	Y	V0
3FTL6	Switch Th Ag/Low Temp.	N	N	Y	RA3FTL6	Y	Y	Y	V0
3FTL6 w/LED	Switch Th Ag/Low Temp w/LED	N	N	Y	RA3FTL6 w/LED	Y	Y	Y	V0
3FTL6-2SL	Switch Low Temp. 2 Straight Legs	N	N	Y	RA3FTL6-2SL	Y	Y	Y	V0
3FTL6RAS	Right Angle Switch Low Temp.	N	N	Y	RA3FTL6RAS	Y	Y	Y	V0
1CXXX	Leds for 1C or 1H Button	N	N	N	RA1CXXX	Y	Y	Y	
2BXXX	Leds for 2B Bezel	N	N	N	RA2BXXX	Y	Y	Y	
3FXXXXX	Leds Bent for 3F	N	N	N	RA3FXXXXX	Y	Y	Y	
1AXX	DI Buttons all colours for 3A	Y	Y	N	No change, pls see note 1				HB
1BXX	DI Buttons f. Bezels all colours	Y	Y	N	No change, pls see note 1				HB
1CXXX	DI Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1DXX	Lk Buttons all colours	Y	Y	N	No change, pls see note 1				HB
1EXXX	Lk Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1FXXX	Lk Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1GA09	Cap black 11	Y	Y	Y	No change				V0
1GC09	Cap black 15	Y	Y	Y	No change				V0
1HXXX	DI Buttons w/Lens all colours	Y	Y	N	No change, pls see note 1				HB
1KXX	Lk Lid all colours	Y	Y	N	No change, pls see note 1				HB
1KXX16	Lid all colours/Lens/Reflector	Y	Y	N	No change, pls see note 1				HB

1KXX1	Lens Milky White For 1K Button	Y	Y	N	No change, pls see note 1			HB
1KXXX6	Reflector For 1K Button White	Y	Y	N	No change, pls see note 1			HB
1MXX	DI Button Double Width all colours	Y	Y	N	No change, pls see note 1			HB
1NXX	Teardrop Buttons all colours	Y	Y	N	No change, pls see note 1			HB
1PXX	Gf Buttons all colours	Y	Y	N	No change, pls see note 1			HB
1QXXX	1P But. W/Square Hole, all colours	Y	Y	N	No change, pls see note 1			HB
1RXXX	1P Button w/Round Hole, all colours	Y	Y	N	No change, pls see note 1			HB
1S09-XX.X	Lk Button Black, all heights	Y	Y	Y	No change			V0
1S11-XX.X	Lk Button Transparent, all heights	Y	Y	N	No change, pls see note 2			V1
1TXX	Sq. Button, all colours	Y	Y	N	No change, pls see note 1			HB
1UXX	Round Button, all colours	Y	Y	N	No change, pls see note 1			HB
1VXX	Arrow Button, all colours	Y	Y	N	No change, pls see note 1			HB
1X XX	Rectangular Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZAXX	DL Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZBXX	Curved Button, all colours	Y	Y	N	No change, pls see note 1			HB
1ZCXX	Round Button, all colours	Y	Y	N	No change, pls see note 1			HB
3E-XX.X	Actuator f. 3E Switch, all heights	Y	Y	Y	No change			V0
3E-AXXXX	Varimec cap 5.2 Round, all heights	Y	Y	Y	No change			V0
3E-BXXXX	Varimec cap 5.2 Square, all heights	Y	Y	Y	No change			V0
3E-EXXXX	Varimec cap 7.8 Round, all heights	Y	Y	Y	No change			V0
3E-FXXXX	Varimec cap 7.8 Square, all heights	Y	Y	Y	No change			V0
3E-KXXXX	Varimec cap 11.6 Round, all heights	Y	Y	Y	No change			V0
3E-LXXXX	Varimec cap 11.6 Square, all heights	Y	Y	Y	No change			V0
AQB01XX	Sealing Boot (incl. Sea.ring)	Y	Y	Y	No change			
AQB0111	Sealing Boot Trans. (incl. Sea.ring)	Y	Y	Y	No change			
AQC09-XX.X	Cap Black, all overall heights	Y	Y	Y	No change			V0
AQC11-XX.X	Cap Trans. all overall heights	Y	Y	N	No change, pls see note 2			V1

AQN-X.X	Bushing, all heights	Y	Y	Y	No change			
1CXXX	Lens f. 1C/1H/1Q Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1EXXX	Lens f. 1E Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1FXXX	Lens f. 1F Buttons, all colours	Y	Y	N	No change, pls see note 2			V1
1RXX1	Round Transparent Lens For 1R	Y	Y	N	No change, pls see note 2			V1
2AXX	DI Bezel, all colours	Y	Y	N	No change, pls see note 1			HB
2BXXX	Bezel/Lens, all colours	Y	Y	N	No change, pls see note 1			HB
2BXXX	Lens f. 2B Bezel, all colours	Y	Y	N	No change, pls see note 2			V1
2KXX	Lk Bezel f. 1K, all colours	Y	Y	N	No change, pls see note 1			HB
2RAS	Right Angle Support.	Y	Y	Y	No change			
2S09-XX.X	Extender, Black Pps, all heights	Y	Y	Y	No change			V0
1A09XDXXX	Button 1A Down/all legends	Y	Y	N	No change, pls see note 1			HB
1A09XUXXX	Button 1A Up/all legends	Y	Y	N	No change, pls see note 1			HB
1B09XDXXX	Button 1b Down/0	Y	Y	N	No change, pls see note 1			HB
1B09XUXXX	Button 1B Up/all legends	Y	Y	N	No change, pls see note 1			HB
1D09XXX	Round Button/all legends	Y	Y	N	No change, pls see note 1			HB
1F096XXX	1F Button/Inverse legends	Y	Y	N	No change, pls see note 1			HB
1ZB09XDXXX	Button1ZB09 Down / all legends	Y	Y	N	No change, pls see note 1			HB
1ZC09XXX	Button 1ZC09 / all legends	Y	Y	N	No change, pls see note 1			HB

Note 1: Complies with RoHS, however plastic material limited to 65°C.
Accessories must be mounted after soldering.

Note 2: Complies with RoHS, however plastic material is limited to 85°C,
so excessive proces heat must be avoided.

041213

041213