

MEC Modular Switches



MEC Colour Codes:

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

	Momentary - Silver P/N 15 501
	Momentary - Gold P/N 15 502
	Alternate - Silver P/N 15 551
	Alternate - Gold P/N 15 552
	Square Button, P/N 16 700
	+ Colour 00/02/03/05/08/09
	Button, P/N 16 300
	+ Colour 00/01/02
	Toggle Lever, P/N 16 550
	+ Colour 00/01/02
	+ Colour 03/04/05/06/07/08/09
	Extender for Bezels
	16 324/25/26
	P/N 16 270
	Toggle Actuator P/N 16 552
	Bezel, P/N*
	+ Colour 00/01/02
	+ Colour 03/04/05/06/07/08/09
	Toggle Bezel, P/N*
	+ Colour 00/01/02
	+ Colour 03/04/05/06/07/08/09
	Extended Bezel, P/N*
	+ Colour 01/03/06/09
	Lens for Rect LED
	P/N 16 327
	+ Colour 02/04/08
	Rectangular LED
	P/N 16 922
	+ Colour 02/04/08
	Pinhead LED A-Bend
	P/N 16 920
	+ Colour 02/04/08
	Pinhead LED B-Bend
	P/N 16 921
	+ Colour 02/04/08
	VARIO SUPPORT
	P/N 16 410 - 16 500
	Please specify cell combinations

[illegible]

MEC Standard Keycap Legends

Legends	Part No.	
	 (16 300) small button	 (16 700) square button
0	18.000	18.200
1	18.001	18.201
2	18.002	18.202
3	18.003	18.203
4	18.004	18.204
5	18.005	18.205
6	18.006	18.206
7	18.007	18.207
8	18.008	18.208
9	18.009	18.209
10	18.020	18.220
11	18.021	18.221
12	18.022	18.222
13	18.023	18.223
14	18.024	18.224
15	18.025	18.225
16	18.026	18.226
17	18.027	18.227
18	18.028	18.228
19	18.029	18.229
20	18.030	18.230
21	18.083	18.283
22	18.084	18.284
23	18.085	18.285
24	18.086	18.286
25	18.087	18.287
26	18.088	18.288
27	18.089	18.289
28	18.090	18.290
29	18.091	18.291
30	18.092	18.292
31	18.093	18.293
32	18.094	18.294
33	18.095	18.295
34	18.096	18.296
35	18.097	18.297
36	18.098	18.298
37	18.099	18.299
38	18.100	18.300
39	18.101	18.301
40	18.102	18.302
50	18.108	18.308
100	18.109	18.309
500	18.110	18.310

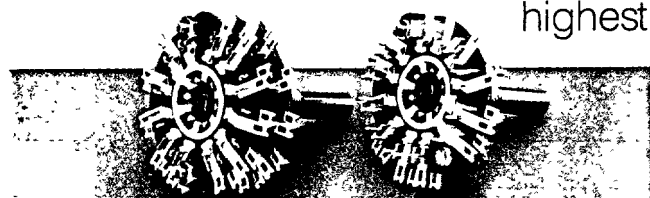
Legends	Part No.	
	 (16 300) small button	 (16 700) square button
A	18.010	18.210
B	18.011	18.211
C	18.012	18.212
D	18.013	18.213
E	18.014	18.214
F	18.015	18.215
G	18.063	18.263
H	18.064	18.264
I	18.056	18.265
J	18.066	18.266
K	18.067	18.267
L	18.068	18.268
M	18.069	18.269
N	18.070	18.270
O	18.071	18.271
P	18.072	18.272
Q	18.073	18.273
R	18.074	18.274
S	18.075	18.275
T	18.076	18.276
U	18.077	18.277
V	18.078	18.278
W	18.079	18.279
Z	18.080	18.280
X	18.081	18.281
Y	18.082	18.282
Æ	18.111	18.311
Ø	18.112	18.312
À	18.113	18.313
Ö	18.114	18.314
→	18.033	18.233
↑	18.034	18.234
↑ ↓	18.115	18.315
← →	18.041	18.241
> <	18.061	18.261
+	18.054	18.254
:	18.055	18.255
.	18.056	18.256
÷	18.057	18.257
%	18.058	18.258
—	18.059	18.259
=	18.060	18.260
))	18.062	18.262
□	18.016	18.216
*	18.019	18.219

Legends	Part No.	
	 (16 300) small button	 (16 700) square button
ON/OFF	18.017	18.217
STOP	18.018	18.218
START	18.031	18.231
FEED	18.032	18.232
REPEAT	18.035	18.235
CLEAR	18.036	18.236
LOAD	18.037	18.237
RESET	18.038	18.238
RUN	18.039	18.239
PRINT	18.040	18.240
UP/DOWN	18.042	18.242
CR	18.043	18.243
MANUAL	18.044	18.244
HOLD	18.045	18.245
BYPASS	18.046	18.246
END	18.047	18.247
CANCEL	18.048	18.248
SUB.	18.049	18.249
CTRL.	18.050	18.250
ESC.	18.051	18.251
CRE.	18.052	18.252
DSP.	18.053	18.253
ON	18.116	18.316
OFF	18.117	18.317

The Modular Switch is manufactured to rigid specifications (pages 10-11) by A/S MEC to meet the needs of an ever changing electronics industry.

Located in Ballerup, a suburb of Copenhagen, Denmark, A/S MEC since its formation in 1938 has become recognized as one of the leading manufacturers of switches in Europe. MEC has achieved this prominence by a policy of technical excellence in design backed up by a team of experienced engineers, craftsmen and workers, which ensure that products will give the user the maximum possible reliability.

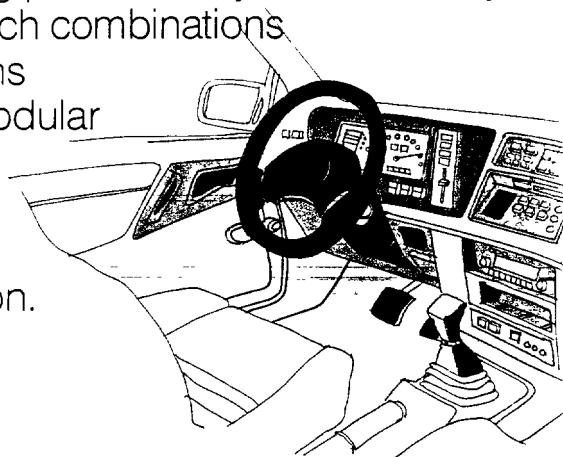
Our engineering and quality assurance programs ensure that products of the highest standard are supplied.



For many years rotary wafer switches have been the backbone of the MEC product range. High-quality MEC rotary switches are available in a variety of versions also as semi-finished goods for assembly by customers.

MEC specialize in made-to-purpose switches with up to 10 wafers and welcome your specific requirements. A separate catalog is available on request.

This catalog presents only a small variety of possible switch combinations and applications for the MEC Modular Switch System, the only limitations are your imagination.



MEC Modular Switches

The MEC switch is not a "me too". When developing the switch the objective was to introduce a unique product which would at the same time become a worldwide standard using a common building block and "stocking" common contact functions in the same switch module.

The objective was met. But evolution and technology goes on. The improved 1500 series is proof of MEC's dedication to continued innovation.

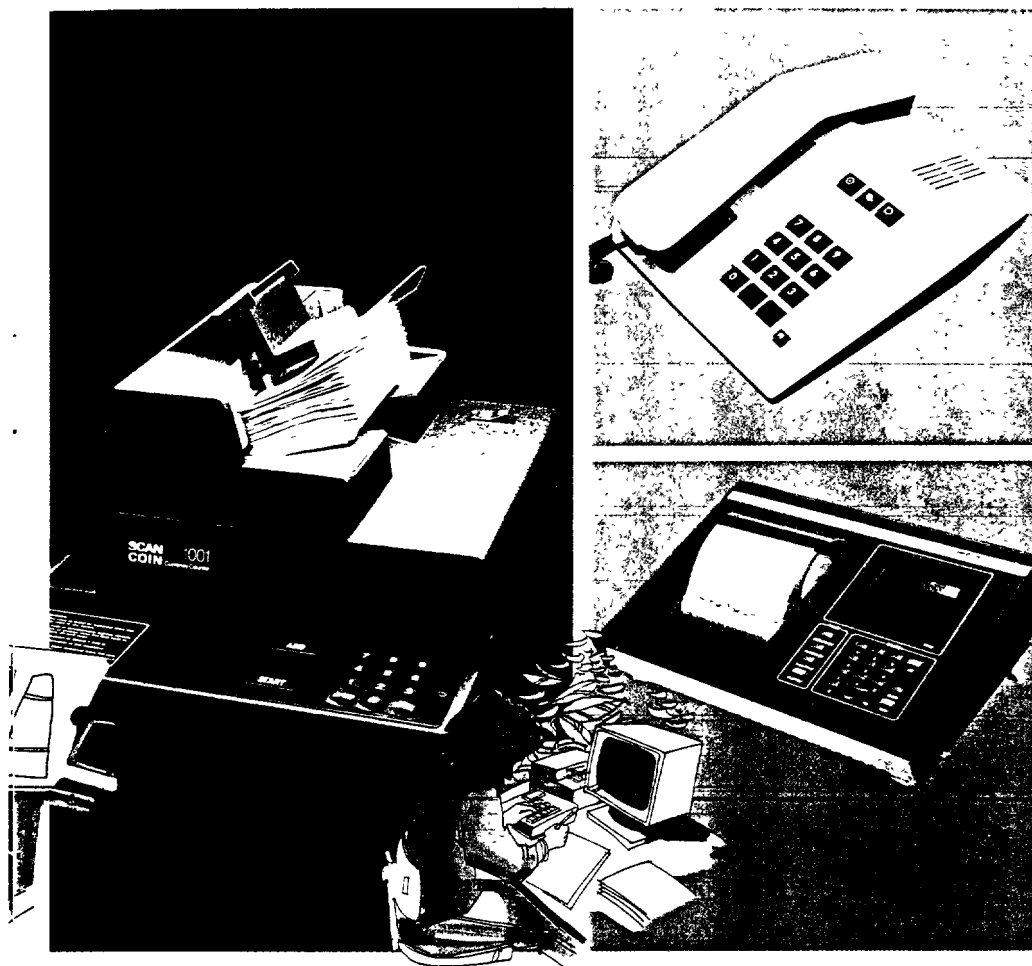
The MEC switch is for PCB/panel mounting in

individual and multiple keypad arrays.

Producers and designers of instrumentation, panel boards, data processing and telecommunication equipment throughout the world use MEC switches.

Manufacturers in the automotive industry*) are switching our way, too.

*) Test report on automotive application available on request.



SUPERIOR FLEXIBILITY

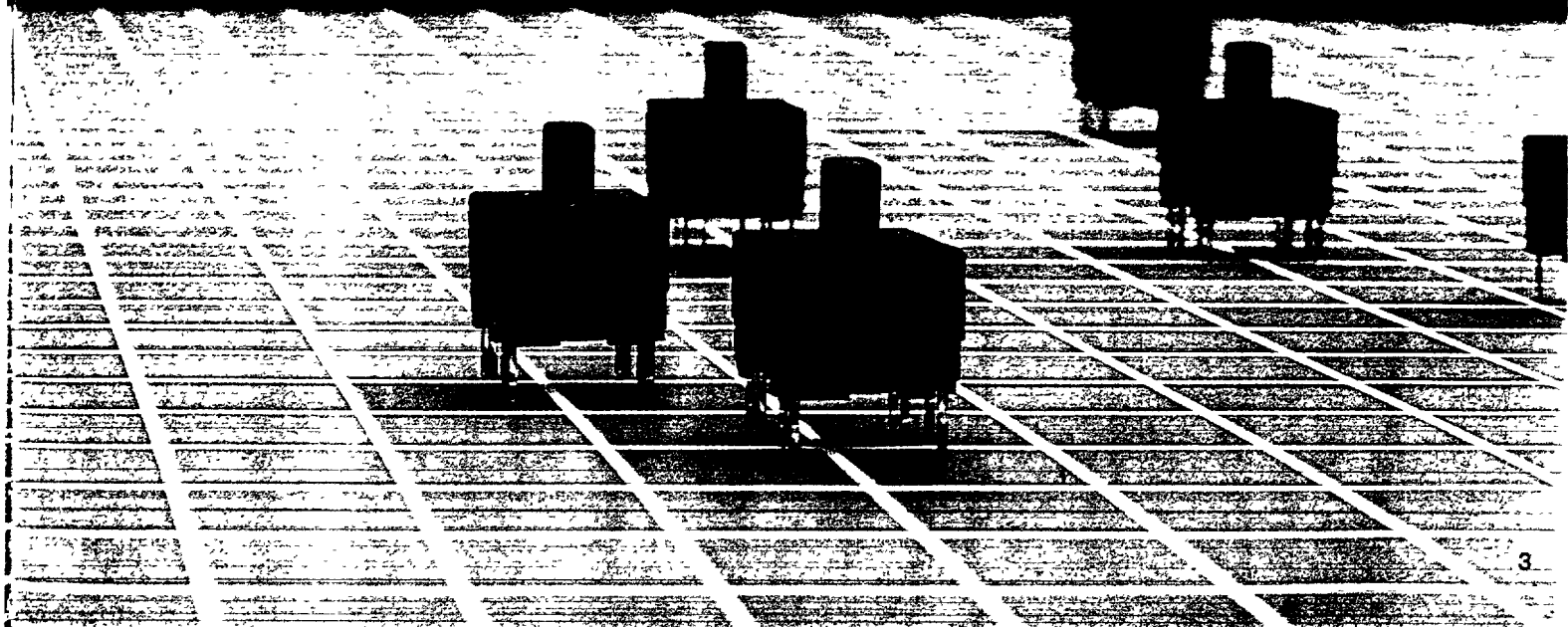
And here is why:

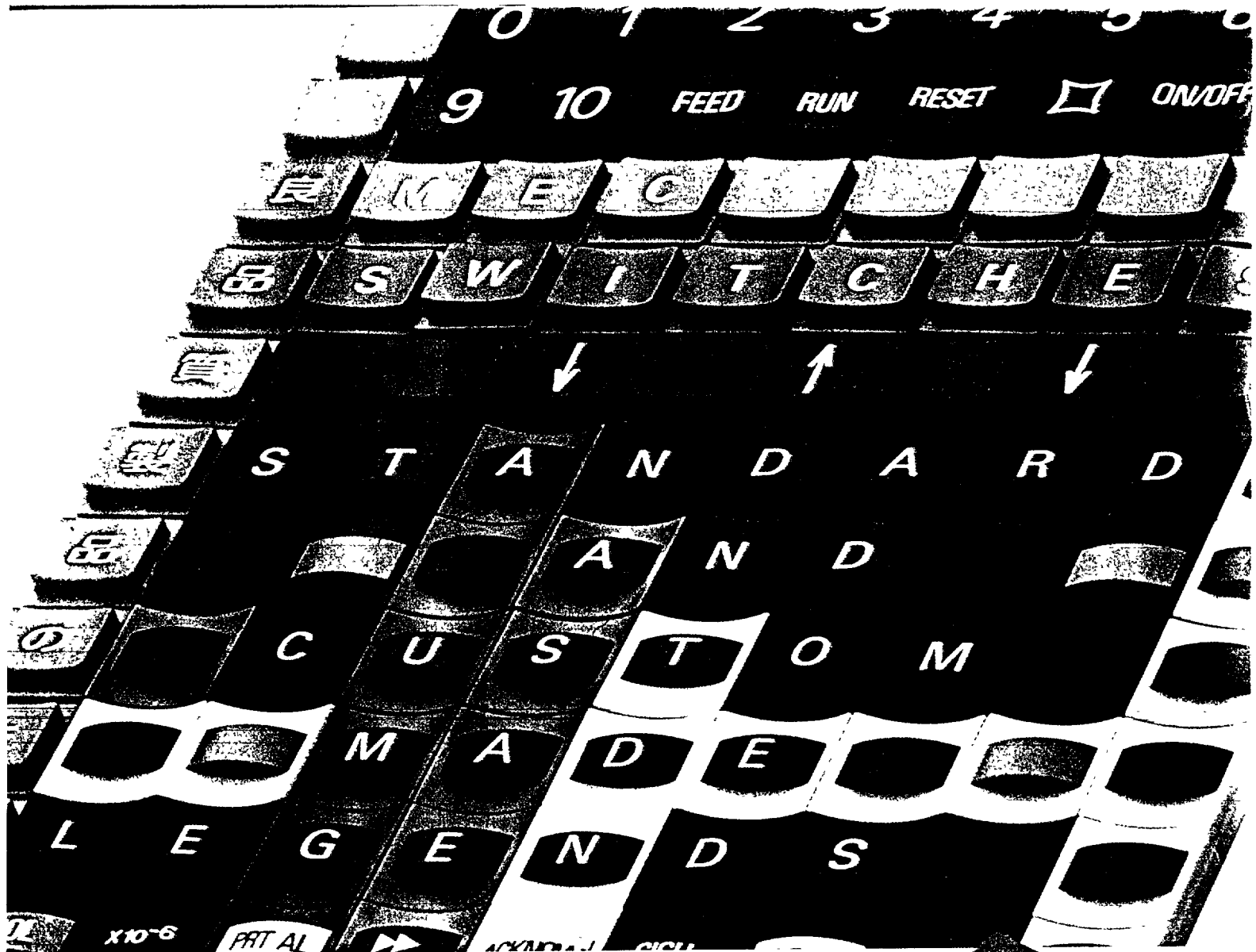
- ★ Momentary and alternate keyaction
- ★ Option for multi-contact function
- ★ Attractive tactile feel
- ★ Long lifetime

Please see page 10-11 for specifications.

The switch is a small compact switch. It is symmetrically constructed and fits 2 ways on your printed circuit board – and "works" both ways.

The flexibility enables you to achieve a high degree of commonality in your production program. You pay no extra for the multi-contact functions – but will always have the option and the additional security provided by the 2 sets of contacts in the switch.

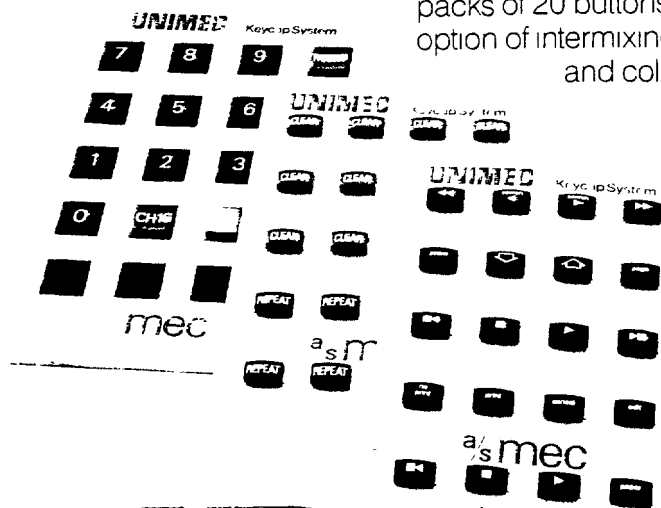
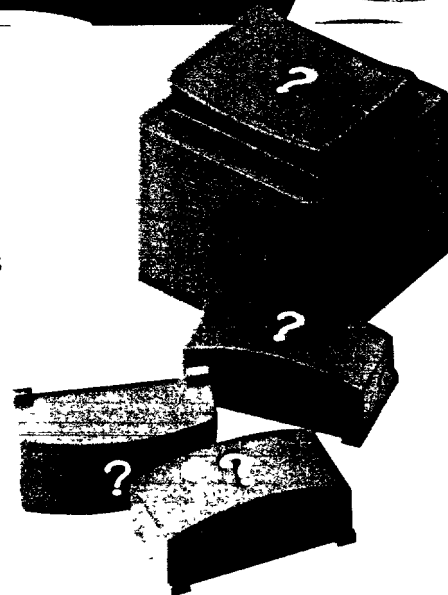




KEYCAP LEGENDS

A range of more than 100 standard legends – numbers, letters, common symbols and commands are available. All standard legends are white on black button. Please call or write for an up-dated list of the standard keycap legends available.

Where standard legends/colors do not fit your need, customized legends and color combination can be made available with short leadtime. Custom-made legends are printed and delivered in packs of 20 buttons with the option of intermixing legends and colors.



The surface of the button is printed with ink which bonds with the plastics to create a clear, sharp, durable legend.

MEC Square Button

P/N 16.700

Distinguished design for operator appeal

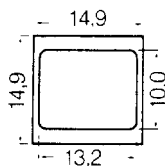
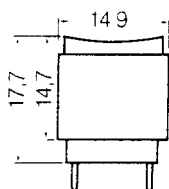
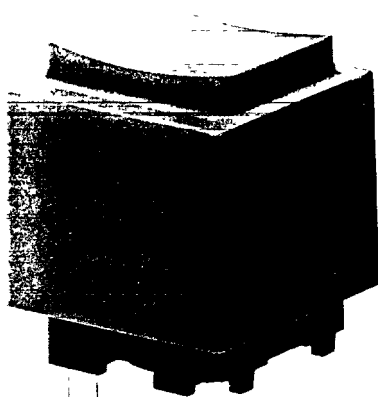
This button meets requirements you may have in terms of functional design, size, color options, flexibility in spacing and low/high profile mounting

- ★ Its 15 mm square shape allows for mounting in any configuration into standard 0.1 inch (2.54 mm) grid PCB.

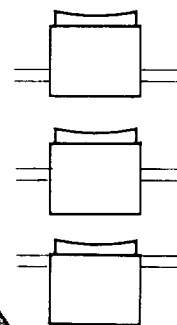
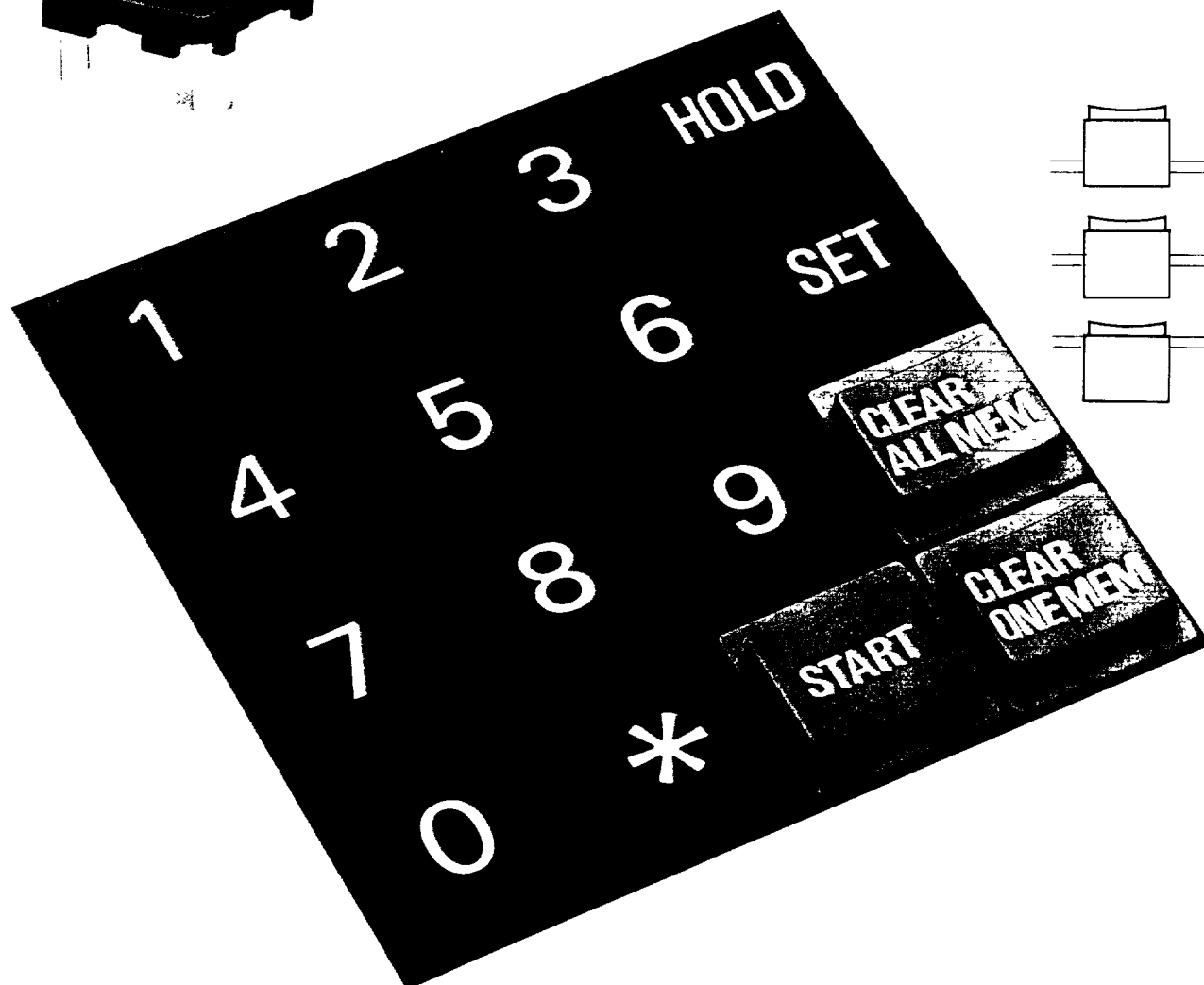
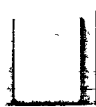
- ★ Its concave shape aids centering the finger on the button

- ★ Its 12 mm deep skirt allows you to mount the button for low or high profile design by raising the button up to 7 mm above your front panel.

- ★ Its skirt also aids the protection of the switch in demanding environments

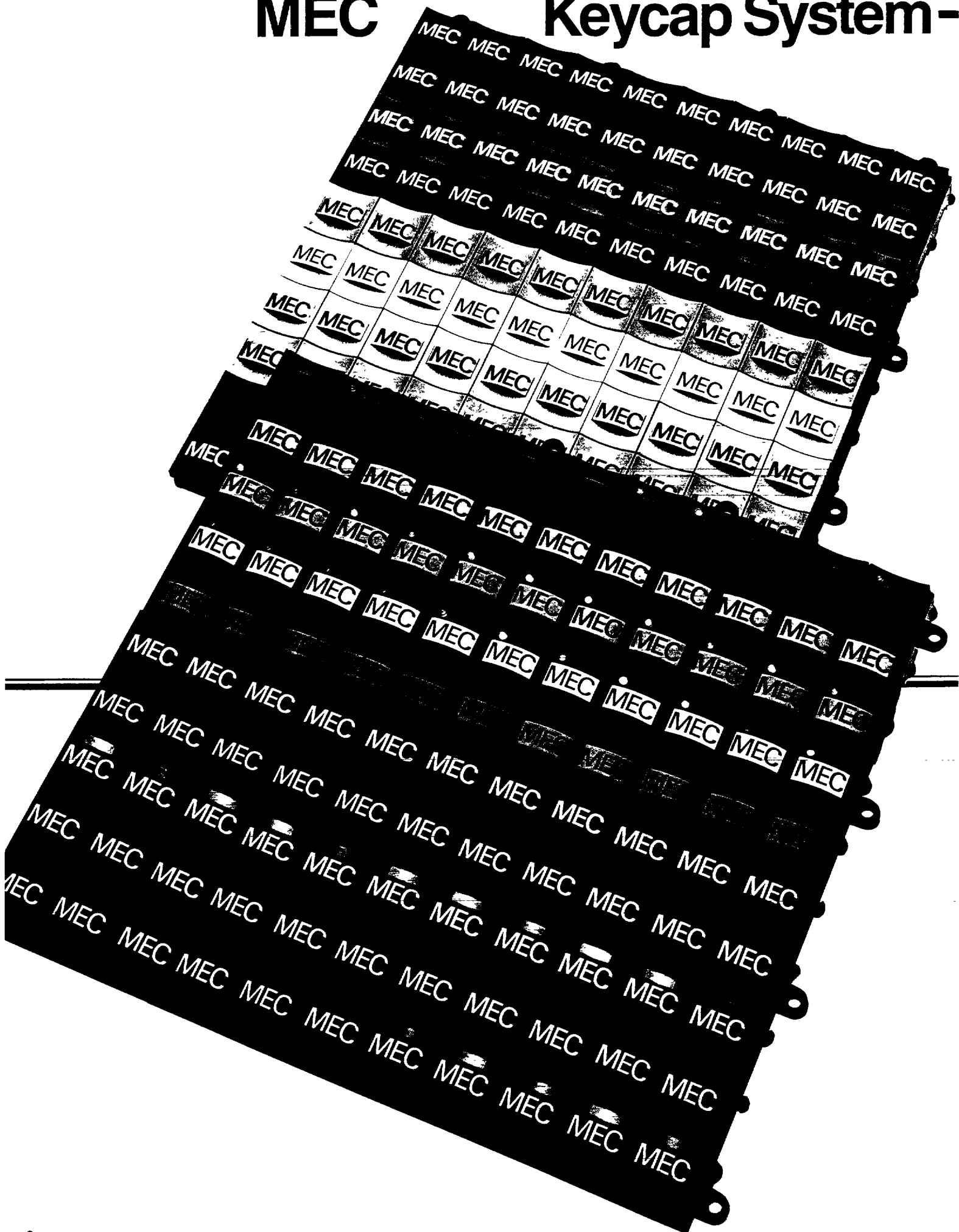


- ★ The button is available in the 6 attractive colors shown. Non-standard colors available on request



MEC

Keycap System-



Elegant and colorful design with LED option



Button
P/N 16.300
+ Colour 00/01/02
/03/04/05/06/07/08/09



Bezel/1 LED B Bend
P/N 16.311
+ Colour 00/01/02
/03/04/05/06/07/08/09



Bezel
P/N 16.310
+ Colour 00/01/02
/03/04/05/06/07/08/09



Bezel/1 LED A Bend
P/N 16.312
+ Colour 00/01/02
/03/04/05/06/07/08/09



Blanking Cap
P/N 16.800
+ Colour 09



Bezel/2 LEDs
P/N 16.314
+ Colour 00/01/02
/03/04/05/06/07/08/09



Bezel/4 LEDs
P/N 16.315
+ Colour 00/01/02
/03/04/05/06/07/08/09



Extender for Bezels
P/N 16.324/25/26
P/N 16.270



Extended Bezel
P/N 16.324
+ Colour 01/03/05/09



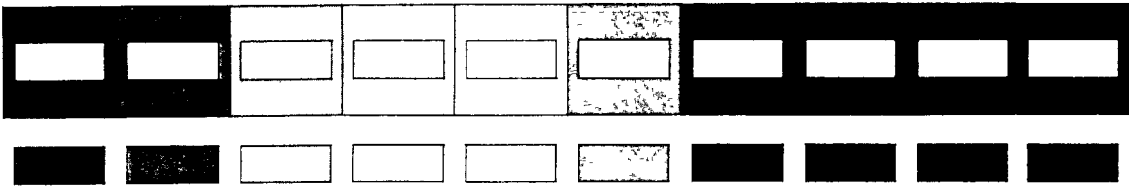
Lens for Rect LED
P/N 16.327
+ Colour 02/04/08



Extended Bezel/1 LED
P/N 16.325
+ Colour 01/03/05/09



Extended Bezel/2 LEDs
P/N 16.326
+ Colour 01/03/05/09



The keycap system provides a unique and stylish design approach to today's front panel. No other standard keycap series offers you such flexibility in implementing your own individual product design.

MEC keycap system comes in 10 colors offering you a rainbow of combinations. You may use only the button or any combinations of buttons and bezels.

The keycap system can be used in single key, vertical or horizontal rows or keyboard configurations, all with eye-catching results and superb quality.

MEC keycap system is practical – its shape helping to center the finger on the button for smooth operation and preventing overpressure on the switch.

Tooling and production of customized keycaps can be done should the requirement exist.

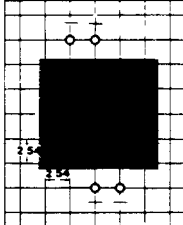
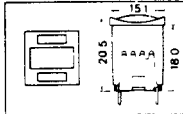
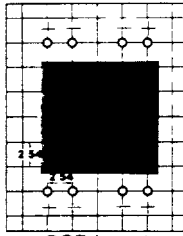
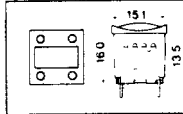
Highlight your switching function

MEC keycap system can be supplied with one, two or four LEDs, either pinhead or large rectangular.

LEDs come with prebent terminals to fit bezel and 0.1 inch grid PCB.

Bezels for pinhead LEDs are available in all 10 colors while rectangular LED bezels (P/N 16.324/ 325/326) come in black, white, grey and brown.

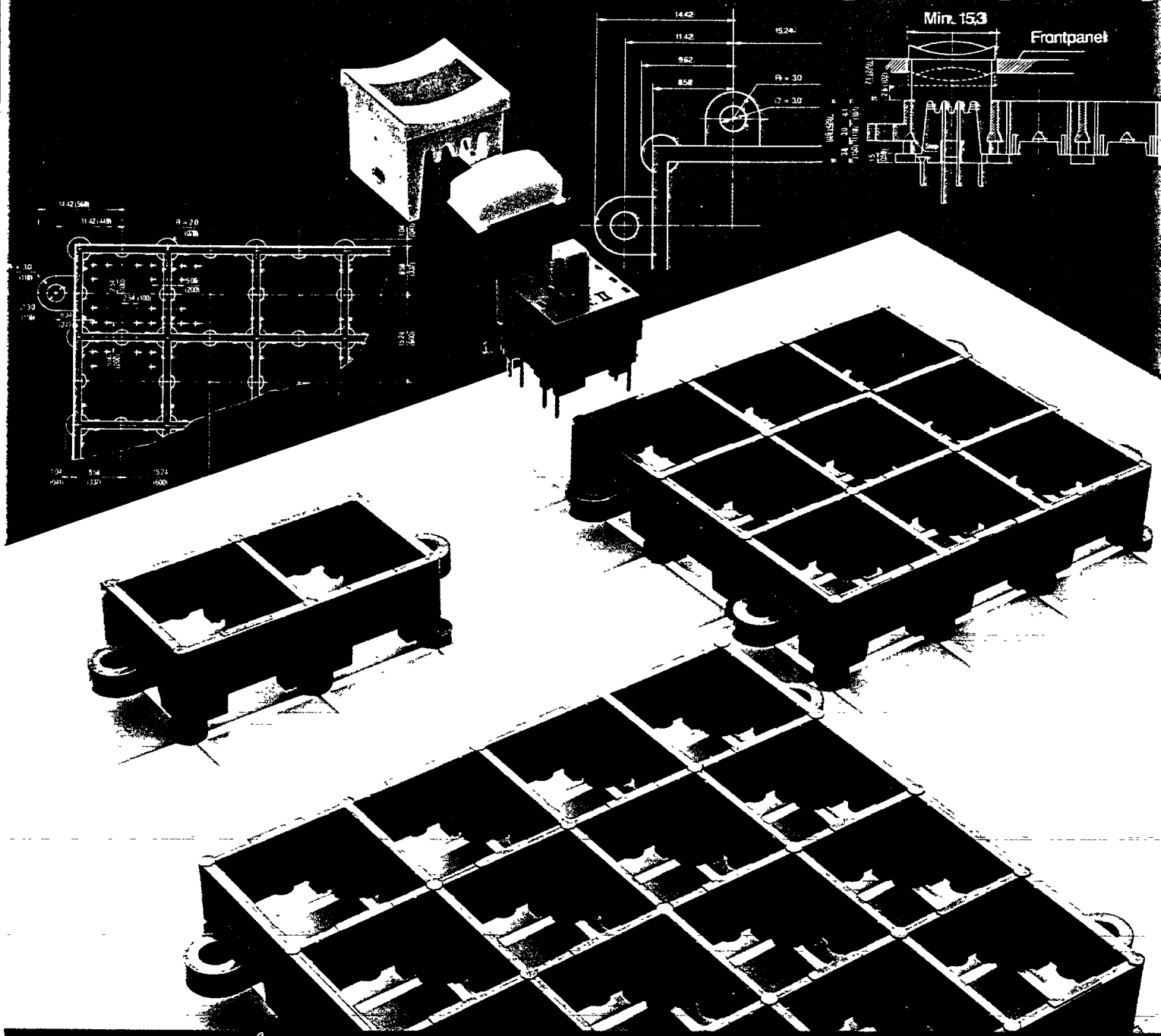




Ratings and Electrical Characteristics							
	● ● LEDs Part Nos 16920 + 16921						
	Unit	Red		Yellow		Green	
	Max Forward Current	mA		50		30	
Soldering Temp	°C	245/3 sec					
Forward Voltage 1F = 20 mA	V	Typ 16	Max 20	Typ 27	Max 32	Typ 27	Max 32

	  LEDs Part No 16922								
	Unit	Red		Yellow		Green			
	Max Forward Current	mA		30		30		30	
Soldering Temp	°C	260/5 sec							
Forward Voltage 1F = 25 mA	V	Typ 25	Max 30	Typ 25	Max 30	Typ 25	Max 30		

VARIO-SUPPORT - Mounting Simplicity



The Vario-Support makes panel mounting a snap and prevents overpressure as well as flexing of the PCB. The versatility of the Vario-matrix system is ideal for developing custom layout.

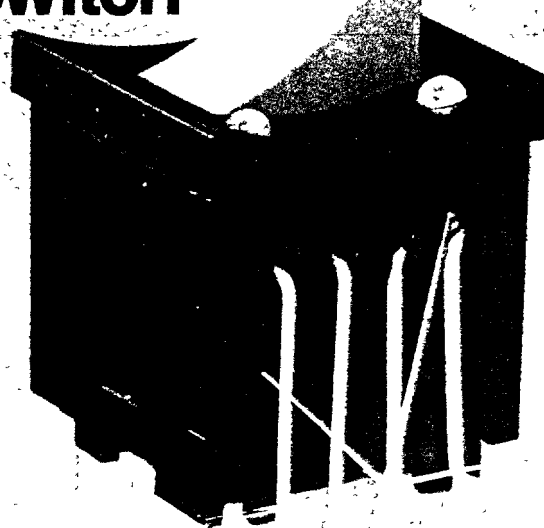
The desired layout and switch functions are determined by simply inserting the appropriate MEC push-button or toggle switch into the Vario-matrix. Vario-Support also aids accurate alignment of switches and keycaps*.

Vario-Support is available in various cell combinations from 1x1 to 10x10. The versions listed on the right hand side are the most common available off the shelf.



* Not applicable to square button P/N 16.700.

MEC Toggle Switch

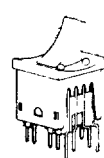
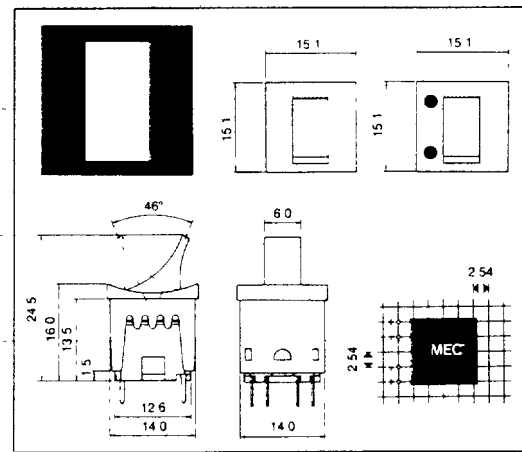
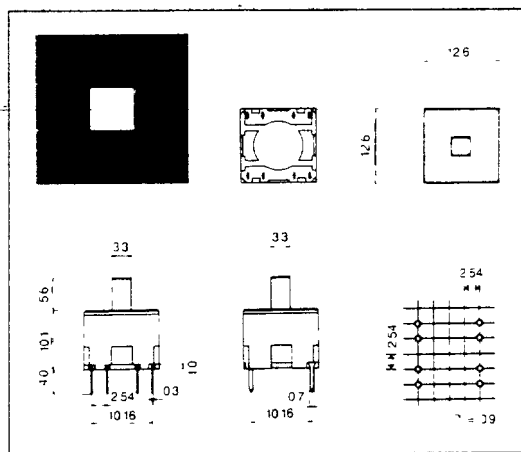


Using the standard momentary module as its base, the toggle keycap system of momentary and alternate action switches has been developed. The mechanical action of the Toggle Switch is determined by the position of the toggle actuator.

Lever and bezels of the toggle keycap system are available in our 10 standard colors and offer you the same color combinations and the option of bezels for one or two pinhead LEDs.

Toggle and push-button keycaps are intermixable and fit into the Vario-Support matrix system.

Lifetime for MEC Modular Switch in the toggle version is 200,000 cycles.



Toggle Bezel
P/N 16.554/55/56

Toggle Lever
P/N 16.550

Toggle Actuator
P/N 16.552

MEC P/N 15.501
momentary

P/N 16.920
P/N 16.921



MEC Modular
Switch
P/N 15.501
Momentary

Toggle Lever
P/N 16.550

Toggle Actuator
P/N 16.552

Toggle Bezel
P/N 16.554

Toggle Bezel/1 LED
P/N 16.555

Toggle Bezel/2 LEDs
P/N 16.556



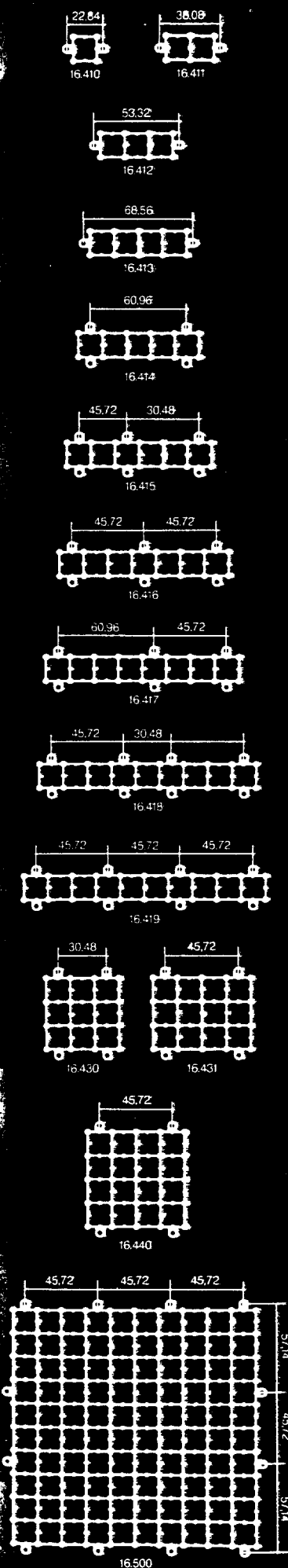
LED
A-Bend
P/N 16.920



LED
B-Bend
P/N 16.921



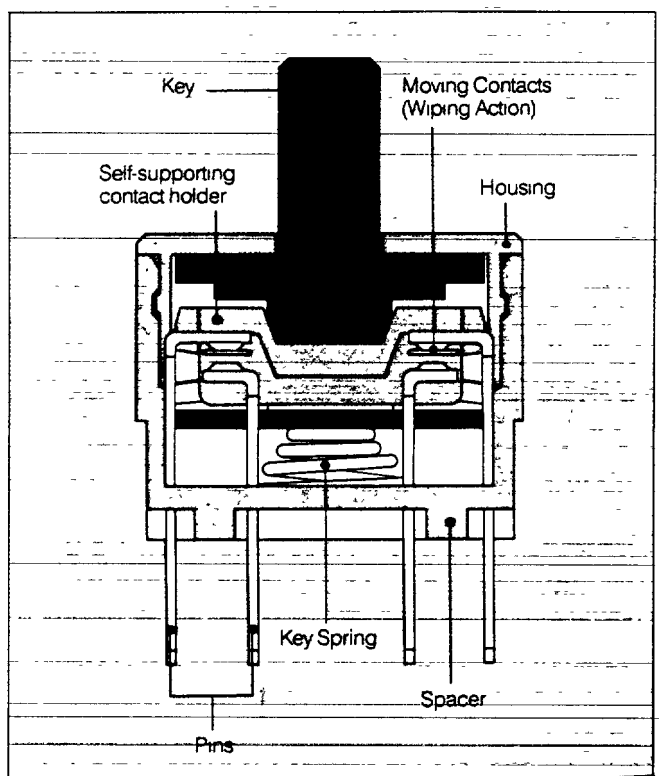
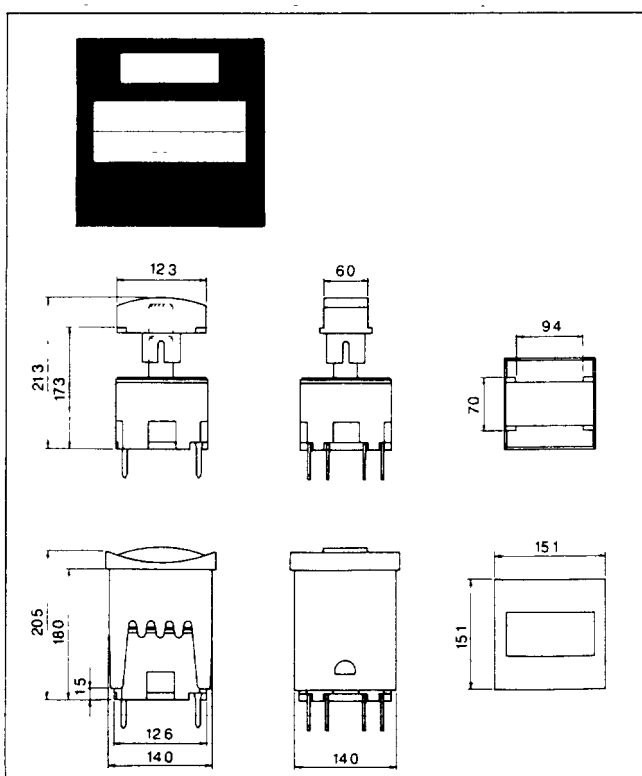
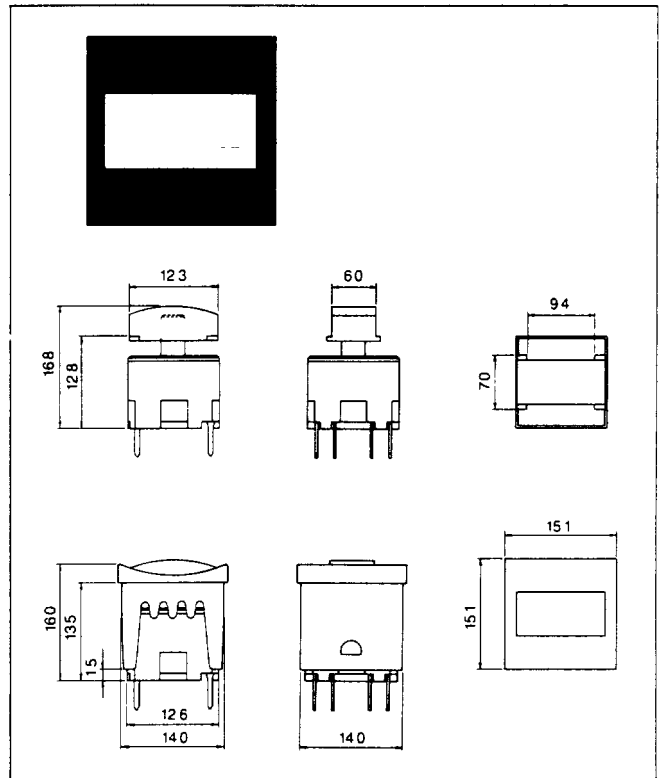
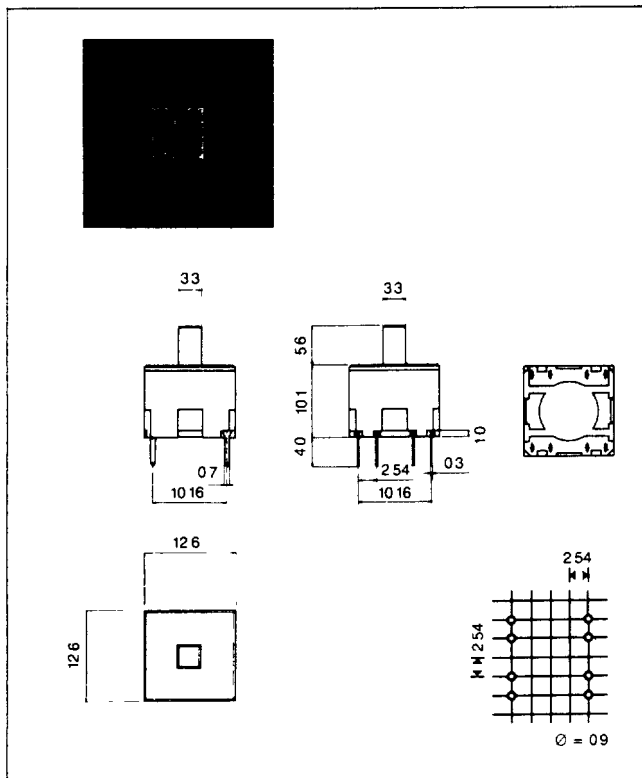
VARIO-SUPPORT
Please specify cell
combination(s)



MEC

ONE SWITCH

- for all functions



FUNCTION-PRINCIPLE AND WIRING DIAGRAM

Contact Function	Principle Symbol	Wiring Diagram	
		Not activated	Activated
2 % Contacts			
2 Make Contacts			
2 Break Contacts			
2 Make and 2 Break Contacts			
Reversed Polarity			

* PATENTS DK 142007 + 141675 US 4234769 + 423 86 53, GB 2016 810 B + 2016 809 B, F 7 904255 + 7 904244, N 146 415 SF 67154 + 67155, NL 176616 + 174681
PAT PEND D S

ELECTRICAL SPECIFICATIONS

MECHANICAL SPECIFICATIONS

MATERIAL SPECIFICATIONS

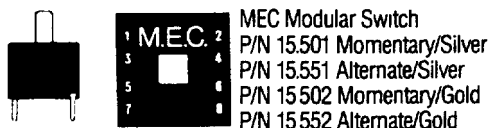
Initial Contact Resistance: 35 mΩ Load: (at 1 cyc./sec.) Current max. 250 mA (50 Hz)* Voltage max. 120 V* Effect max. 9 Watts AC Effect max. 6 Watts DC Current carrying capacity, non switching: 0,5 A * Total not to exceed max. power load Dielectric Spec.: Contact to adjacent contact: 1,000 V for 2 minutes. Insulation Resistance: Between adjacent contacts: $5 \times 10^{13} \Omega$ Loss Angle $\tan \delta$ (at 1 KHz): Between adjacent contacts: 7×10^{-6} Capacitance: Between adjacent contacts: $< 0,5 \text{ pF}$ Contact Bounce: $< 5 \text{ m sec.}$	Key Travel: 1,8 mm Key Pressure: 2,0 N (+ 0,30 - 0,10) Lifetime: Momentary - 1 500.000 cycles Alternate - 500.000 cycles Temperature Range: Working temp. -25°C to $+75^\circ\text{C}$ Storage temp. -65°C to $+85^\circ\text{C}$ Environmental Endurance: (IEC-68-2-3) Damp heat, steady state: 56 days, 40°C, 93% RH Soldering: (IEC 68-2-20) Resistance to Soldering Heat: (IEC 68-2-20 Test Tb method 1A)	Housing & Key: Polycarbonate, Glass reinforced Contacts: Fixed - Tin bronze with nickel coating Presoldered pins Silver or gold in contact area. Moving - Beryllium copper with nickel coating Silver or gold in contact area Moment Spring: Stainless Steel Latch Pin: Stainless Steel Key Spring: Stainless Steel Contact Lubricant: Heated Vaseline solution MEC Keycap System. ABS
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Our policy is one of continuous development and specifications are subject to change without prior notice.

Ordering Information



Switch Module



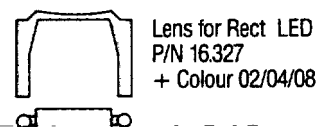
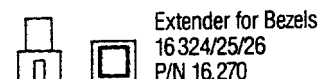
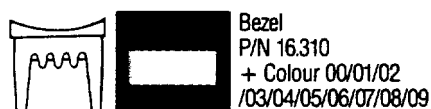
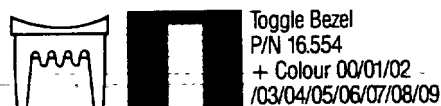
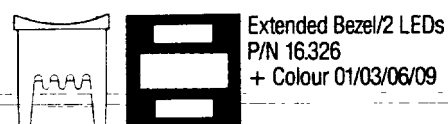
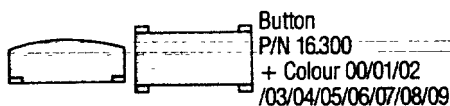
Extended Bezel



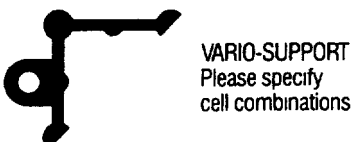
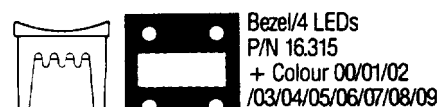
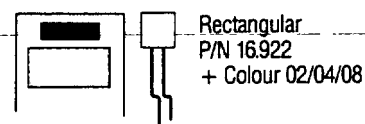
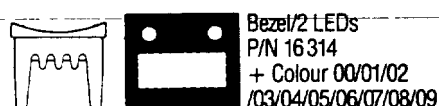
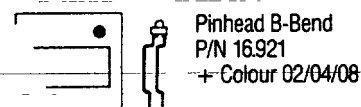
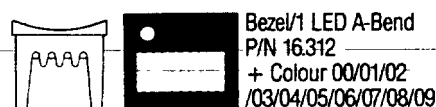
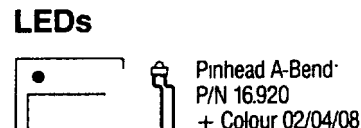
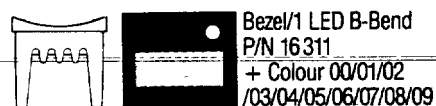
Toggle System



Keycaps and Bezels



Bezel for LEDs



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

Call or write for:

- ★ Price and delivery information
- ★ Application assistance
- ★ Cost/Performance evaluation
- ★ Free samples for test and prototyping

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