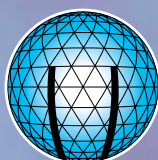


APEM

a world of switching capabilities

Overview of switch ranges



A P E M

APEM

A worldwide manufacturer of professional switches

A switch specialist since its creation, the company sells products to such markets as industrial, instrumentation, security, telecommunications, military, automotive and medical.

APEM serves more than 20 000 customers, including international industrial groups, directly or through its sales network of 7 subsidiaries and 130 distributors and agents on five continents.

In APEM's full-line catalogue you will find more than 15 000 possible part numbers of switches with low or high current ratings, generally classified by actuator type.

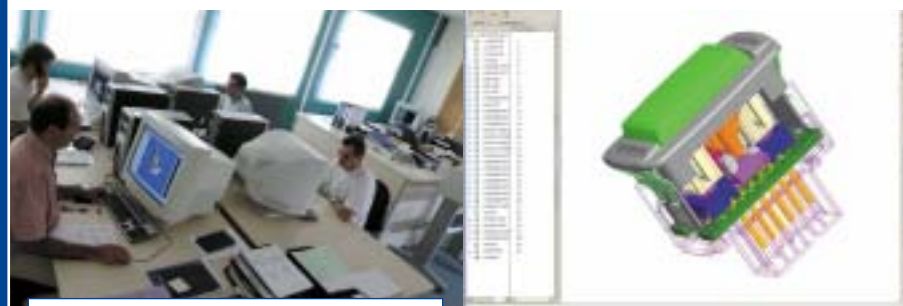
These configurations highlight our basic offering of standard models and options, which are continuously supplemented to satisfy our customers' special requests.

For the main ranges, product selection guides are available. They have been put together on the following pages to help you select the most appropriate switch series for your application.

An integrated process

From raw material transformation to finished products - through the design and production of tooling - APEM controls all the production stages.

Development capability - Design



CAD/CAM stations

Design



Fabrication of tooling

Qualification

Tooling - Automatic machines



Grinding

EMD cutting



Tooling

Milling



Switches industrial process



Screw machining

Stamping



Plating

Moulding



Soldering

Assembly



Marking

Testing

A wide range of international approvals

APEM has a strong reputation for quality, accredited by the ISO 9001 certification, 2000 version. The products are designed and produced in accordance with quality standards and environmental requirements.



Underwriters Laboratories



Canadian Standards Association



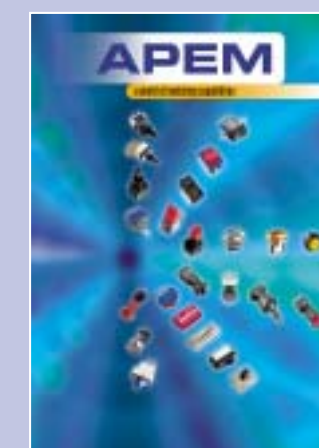
NF - Normes françaises
EN 61058-1



VDE - Germany
EN 61058-1



CECC (European)- No 008-95
Standard : CECC 96000



Full-line catalogue
on request:
www.apem.com

Toggle switches



Section A of full-line catalogue

ZL	Tiny, metal bushing	A 3
SMT TL	Tiny, SMT, washable	A 5
TL	Tiny, washable	A 7
S and SF	Miniature, washable	A 13
5000	Miniature, the widest range (includes 55000)	A 22
21000N	Miniature, low profile	A 55
10600	Professional miniature, bushing Ø 10 (.393)	A 60
11000	Professional miniature, bushing Ø 6.35 (1/4)	A 63
12000	Professional miniature, bushing Ø 11.9 (15/32)	A 71
12000X778	High performance miniature, bushing Ø 11.9 (15/32)	A 78
1000	Industrial, metal lever, economy range	A 85
1500	Industrial, insulated lever and bushing	A 88
1600/1700	Industrial, metal lever	A 91
4600/4400	Industrial, insulated or metal lever	A 94
600H	Industrial, metal lever (includes 6-600H)	A 100
600NH	Industrial, insulated lever (includes 6-600NH)	A 106
660	Industrial, metal lever, four pole	A 108
3500	High performance industrial, environmentally sealed	A 110
3600NF	Industrial, sealed for outdoor applications	A 115
6000	Industrial for military applications	A 118

Selection guide

Series	ZL	SMT TL	TL	S and SF	5000	21000N	10600	11000	12000	12000X778
Page	A-3	A-5	A-7	A-13	A-22	A-55	A-60	A-63	A-71	A-78
Poles	1	1	1,2	1,2	1,2,3,4	1,2	1,2	1,2,3,4	2,3,4	2,3,4
Maximum current	500mA 48VDC	0,4VA 20V AC/DC	0,5A 48V AC/DC	2A 250VAC 4A 30VDC	3A 250VAC 4A 30VDC	2A 250VAC 4A 30VDC	2A 250VAC 3A 24VDC	2A 250VAC 4A 30VDC	2A 250VAC 4A 30VDC	2A 250VAC 4A 30VDC
Bushing dimension										
Ø4,83 (10-48)	X									
Ø6 (.236)					X					
Ø6,35 (1/4)				X	X	X		X		
Ø10 (.393)							X			
Ø11,9 (15/32)					X				X	X
Mounting options										
Horizontal SMT		X								
Vertical right angle SMT		X								
Vertical - Through hole	X		X	X	X			X	X	X
Horizontal - Through hole			X	X	X	X		X		
Vert. right angle Through hole			X	X	X					
Panel	X			X	X	X	X	X	X	X
Terminal options										
PCB	X	X	X	X	X	X		X	X	X
Solder lugs	X			X	X		X	X	X	X
Quick-connect					X					
Wire wrap			X		X					
Sealing	No	Process sealed	Process sealed	Process sealed	Optional	No	No	Optional	Optional	IP67

Series	1000	1500	1600/1700	4600/4400	600H	600NH	660	3500	3600NF	6000
Page	A-85	A-88	A-91	A-94	A-100	A-106	A-108	A-110	A-115	A-118
Poles	1	1	1	1,2,3	1,2,3	1,2,3	4	1,2	1,2	1,2,3,4
Maximum current	3A 250VAC 6A 30VDC	6A 250VAC 5A 12VDC	4A 30VDC	4A 250VAC	15A 250VAC 10A 24VDC	15A 250VAC 10A 24VDC	5A 250VAC 10A 30VDC	16A 250VAC 15A 32VDC	6A 250VAC 15A 28VDC	5A 250VAC 6,5A 30VDC
Bushing dimension										
Ø11,9 (15/32)								X		X
Ø12 (.472)	X	X	X	X	X	X	X		X	
Mounting options										
Vertical Through hole				X						
Panel	X	X	X	X	X	X	X	X	X	X
Terminal options										
PCB				X						
Solder lugs	X	X	X	X	X	X	X	X	X	X
Quick-connect	X	X	X	X	X	X	X	X	X	X
Screw	X		X		X	X	X	X	X	X
Sealing	No	No	No	No	Optional	No	Optional	IP67	Yes	Optional

Pushbutton and key switches



Section B of full-line catalogue

ZP	Tiny, metal bushing	B 3
SMT TP	Tiny, SMT, washable	B 5
TP	Tiny, washable	B 7
9100-9200-9500	Subminiature, momentary	B 13
IF	Miniature, sealed, momentary, Ø 25 (.984) actuator	B 21
IB-IS	Miniature, sealed, momentary	B 22
IP	Miniature for harsh environments, latching or momentary, illuminated & non-illuminated	B 26
SP	Miniature, washable, snap-action	B 38
8000	Miniature, momentary or alternate action	B 44
9400-9600	Miniature, momentary or alternate action	B 50
10400	Professional miniature, bushing Ø 10 (.393)	B 58
13000	Professional miniature, quick-break, momentary	B 60
13000X778	High performance miniature	B 68
18000	Miniature, snap-action, momentary	B 73
PHAP40	Miniature key switches, momentary or latching action	B 86
AV	Industrial, anti-vandal and security New models!	B 88
IT	Industrial, mains, 6000V dielectric strength	B 108
1200	Industrial, momentary, round plunger	B 111
1200M-1200MR	Robust industrial, round metal plunger, momentary	B 115
1400N	Industrial, momentary, snap-in mounting, square plunger	B 118
4700/4800	Industrial, momentary or alternate action	B 121
PBA	Piezo New!	B 124

Selection guide

Series	ZP	SMT TP	TP	9500	IF	IB-IS	IP latching	IP	SP	8000	9400-9600
Page	B-3	B-5	B-7	B-13	B-21	B-22	B-26	B-30	B-38	B-44	B-50
Poles	1	1	1,2	1	1	1	1	1	1,2	1,2	1
Maximum current	500mA 48VDC	0,4VA 20V AC/DC	0,5A 48V AC/DC	100mA 30VDC	100mA 50VDC	100mA 50VDC	2A 125VAC X	200mA 50VDC X	1A 30VDC	3A 250VAC 4A 130VDC	1A 30VDC
Illuminated											
Bushing dimension											
Ø4 (.157)				X							
Ø4,83 (10-48)	X										
Ø6,35 (1/4)									X	X	X
Ø11,9 (15/32)										X	X
Ø12 (.472)						X	X	X			
Ø16 (.629)					X						
Mounting options											
Horizontal SMT		X									
Vertical right angle SMT		X									
Vertical Through hole	X		X	X		X	X	X	X	X	X
Horizontal Through hole			X						X	X	
Vert. right angle Through hole			X	X					X		
Panel	X			X	X				X	X	X
Snap-in					X	X					
Terminal options											
Solder lugs	X			X		X	X	X	X	X	X
Quick-connect					X	X	X	X			X
Wire wrap			X								
Wire leads							X	X			
Sealing	No	Process sealed	Process sealed	Optional	IP67	IP67	IP67	IP67	Process sealed	Optional	Optional

Series	10400	13000	13000X778	18000	PHAP40	AV	IT	1200	1400N	4700-4800	PBA
Page	B-58	B-60	B-68	B-73	B-86	B-88	B-108	B-111	B-118	B-121	B-124
Poles	1,2	1,2	2	1,2	2	1,2	2	1	1	1,2	1
Maximum current	2A 250VAC 3A 24VDC	2A 250VAC 4A 30VDC	2A 250VAC 4A 30VDC	7A 30VDC	100mA 30VDC	5A 250VAC X	1,5A 250VAC	4A 250VAC 4A 24VDC	6A 12VDC	3A 250VAC	1A 24VDC X
Illuminated											
Bushing dimension											
Ø6,35 (1/4)		X		X							
Ø10 (.393)	X										
Ø11,9 (15/32)		X	X								
Ø12 (.472)								X		X	
Ø16 (.629)						X					X
Ø19 (.748)						X					
Ø22 (.866)						X					X
Ø24 (.944)						X					
Mounting options											
Vertical Through hole		X	X	X	X	X			X	X	
Horizontal Through hole		X		X			X				
Vert. right angle Through hole				X							
Panel	X	X	X	X		X		X	X	X	X
Snap-in				X					X		
Terminal options											
Solder lugs	X	X	X	X		X		X	X	X	
Quick-connect						X		X	X	X	
Screw						X		X			
Wire leads											X
Sealing	No	Optional	IP67	No	No	Optional	No	No	No	No	IP68

Tact switches



Section C of full-line catalogue

PHAP33	SMT	New models!	C 3
PHAP33	Through-hole		C 12

Selection guide

Series	PHAP3390 PHAP3391	PHAP3380	PHAP3371 PHAP3372 PHAP3373 PHAP3374	PHAP3378	PHAP3361	PHAP3355	PHAP3366 PHAP3365	
Page	C-4	C-5	C-6	C-8	C-9	C-9	C-10	
Type (SMT/Through hole)	SMT	SMT	SMT	SMT	SMT	SMT	SMT	
Contact	N.O.	N.O.	N.O.	N.C.	N.O.	N.O.	N.O.	
Case format	4,2x4,2mm	6x6mm	6,2x6,2mm	7,6x7,6mm	6x3,5mm	6x3,5mm	6,1x3,7mm	
Button height from PCB	1,5mm	1,6mm	2,6 to 3,4mm	4,3mm	4,3 and 5mm	1,8mm	2,5mm	
Grounding tab	-	Yes	Yes	-	-	Yes	-	
Packaging	T/R - Bags	T/R - Bags	T/R - Bags	T/R	T/R - Bags	T/R	T/R	
Maximum ratings	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	
Mounting options								
Horizontal SMT	X	X	X	X	X		X	
Vertical right angle SMT						X		

Series	PHAP3368	PHAP3305	PHAP3362 PHAP3363	PHAP3301 to PHAP3308	PHAP3307	PHAP3350 PHAP3351 PHAP3352	PHAP3353	PHAP3320 PHAP3321
Page	C-11	C-11	C-12	C-13	C-14	C-15	C-15	C-16
Type (SMT/Through hole)	SMT	SMT	Through hole	Through hole	Through hole	Through hole	Through hole	Through hole
Contact	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.
Case format	6x6mm	6x6mm	6x3,5mm	6x6mm	6,1x6,1mm	7,2x7,2mm	10x10mm	12x12mm
Button height from PCB	4,3 to 13mm	5,9mm	4,3 and 5mm	4,3 to 13mm	4,3 to 7mm	4,35 to 13mm	13mm	4,3 to 12mm
Grounding tab	-	Yes	-	Yes	-	Yes	-	Yes
Caps	Yes	-	-	Yes	-	-	-	Yes
Packaging	T/R - Bags	T/R	Bags	Bags	Tape	Bags	Bags	Bags
Process sealed						Yes	Yes	
Maximum ratings	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC	50mA 12VDC
Mounting options								
Horizontal SMT	X							
Vertical right angle SMT		X						
Vertical Through hole			X	X	X	X	X	X
Horizontal Through hole			X	X		X		

Rocker and paddle switches



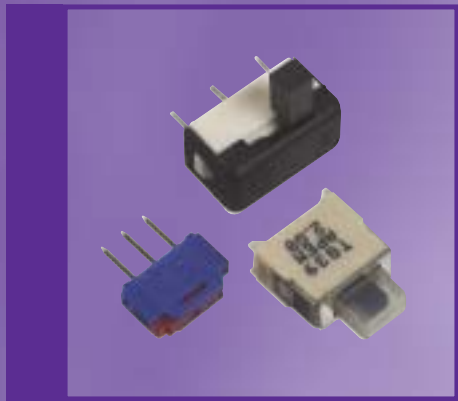
Section D of full-line catalogue

SMT TR	Tiny, SMT, washable	D 3
TR	Tiny, washable	D 5
S and SR	Miniature, washable	D 10
AS	Miniature, snap-in	D 20
7000	Miniature (includes 57000)	D 23
FM	Miniature, snap-in, panel cut-out 19 x 13 (.750 x .508)	D 41
KG	Power industrial, sealed, illuminated & non-illuminated	D 44
2600	Industrial, illuminated & non-illuminated	D 49

Selection guide

Series	SMT TR	TR	S-SR	AS	7000	FM	2600	KG
Page	D-3	D-5	D-10	D-20	D-23	D-41	D-44	D-49
Poles	1	1,2	1,2	1	1,2	1	1,2	1,2
Maximum ratings	0,4VA 20V AC/DC	0,5A 48V AC/DC	2A 250VAC 4A 30VDC	2A 250VAC	3A 250VAC 4A 30VDC	10A 250VAC	16A 250VAC	15A 250VAC 15 A 12VDC
Illuminated						X	X	X
Mounting options								
Horizontal SMT	X							
Vertical Through hole		X	X	X	X	X		
Horizontal Through hole		X	X		X			
Vert. right angle Through hole		X	X		X			
Snap-in			X	X	X	X	X	X
Rear mounting			X		X			
Panel cut-out				18,65X8,9		19,2x12,9	30X22	36,8x21,1
Terminal options								
PCB	X	X	X	X	X	X		
Solder lugs			X	X	X	X	X	X
Quick-connect						X	X	X
Screw							X	X
Sealing	Process sealed	Process sealed	Process sealed	No	No	Optional boot	Optional boot	IP65

Slide switches



Section E of full-line catalogue

NK	Subminiature	E 3
SMT TG	Tiny, SMT, washable	E 4
TG	Tiny, washable	E 6
G	Telecom grade	E 9
25000N	Professional	E 15

Selection guide

Series	NK	SMT TG	TG	G	25000N
Page	E-3	E-4	E-6	E-9	E-15
Poles	1	1	1	1,2	1,2
Maximum ratings	500mA 12VDC	0,4VA 20V AC/DC	0,5A 48V AC/DC	2A 250VAC 3A 30VDC	2A 250VAC 1A 30VDC
Mounting options					
Horizontal SMT		X			
Vertical Through hole	X		X	X	X
Horizontal Through hole	X		X	X	X
Vert. right angle Through hole				X	
Panel				X	
Terminal options					
PCB	X	X	X	X	X
Solder lugs				X	
Sealing	No	Process sealed	Process sealed	No	No

Dip and coded rotary switches



Section F of full-line catalogue

CR36	Low profile coded rotary, SMT or through-hole	New!	F 3
CR65	Coded rotary, through-hole		F 5
DS/DSR	Standard DIP		F 8
DP/DPL	Piano DIP		F 10
DA	Right angle DIP		F 11
IKN	Low profile DIP, SMT or through-hole		F 12
IKD	DIP, SMT or through-hole	New!	F 15
IKH	Half pitch DIP, SMT		F 17

Selection guide

Series	CR36	CR65	DS-DSR	DP-DPL	DA	IKN	IKD	IKH
Type	Rotary Coded		DIP					
Page	F-3	F-5	F-8	F-10	F-11	F-12	F-15	F-17
Number of positions	10 & 16	10 & 16	2-12 (except 11)	2-12 (except 11)	2-12 (except 11)	2-8 (even only)	1-12 (except 11)	2-10 (even only)
Maximum ratings	400mA 24VDC	400mA 24VDC	100mA 50VDC	100mA 50VDC	100mA 50VDC	100mA 48VDC	100mA 50VDC	100mA 50VDC
Process Sealed	Yes	Yes	W. optional tape	W. optional tape	W. optional tape	W. optional tape	W. optional tape	W. optional tape
Profile off PCB	Through hole: 3,65mm SMT: 3,85mm	6,5mm	5,85mm	10,3mm	9,9mm	Through hole: 4mm SMT: 2,85mm	Through hole: 3,6mm SMT: 3,3mm	1,6mm
Mounting options								
Horizontal SMT	X					X	X	X
Vertical Through hole	X	X	X	X	X	X	X	
Horizontal Through hole		X						

Industrial controls



Section G of full-line catalogue

	Distinctive features and specifications	G 3
A1	Engraved aluminium flush mounting pushbuttons & indicators - Panel cut-out Ø 22 (.866)	G 5
A01	Pushbutton, rotary lever, keylock & emergency stop switches - Indicators - Panel cut-out Ø 16 (.630)	G 6
A02	Pushbutton, rotary lever, keylock & emergency stop switches - Indicators - Panel cut-out Ø 22 (.866) or 30 (1.181)	G 16
A03	Compact pushbuttons and indicators - Panel cut-out Ø 22 (.866) or 30 (1.181)	G 25

Selection guide

							
Series	A1	A01	A01	A01	A01	A01ES	A01
Type	Pushbutton	Pushbutton	Indicator	Rotary	Keylock	Emergency Stop	Mushroom Head Pushbutton
Page	G-5	G-6	G-7	G-8	G-9	G-10	G-12
Poles	1,2,3,4	1,2,3,4		1,2,3,4	1,2,3,4	1,2	1,2,3,4
Sealing	IP65	IP65	IP65	IP65	IP65	IP65	IP65
Back panel sealing	Option	Option	Option	Option	Option	Option	Option
Illuminated	Yes	Yes	Yes	No	No	No	No
Maximum current	6A 250VAC 6A 12VDC	6A 250VAC 6A 12VDC	6A 250VAC 6A 12VDC	6A 250VAC 6A 12VDC	6A 250VAC 6A 12VDC	1,5A 250VAC AC-15	6A 250VAC 6A 12VDC
Panel cut-out							
Ø16mm		X	X	X	X	X	X
Ø22mm	X	X	X	X	X	X	X
Flush mounting	Yes	Option	Option	Option	Option	Option	Option
Terminal options							
Solder lugs	X	X	X	X	X	X	X
Quick-connect	X	X	X	X	X	X	X
PCB Mounting	Option	Option	Option	Option	Option	Option	Option

							
Series	A02	A02	A02	A02	A02ES	A02	A03
Type	Pushbutton	Indicator	Rotary	Keylock	Emergency Stop	Mushroom Head Pushbutton	Pushbutton
Page	G-16	G-19	G-20	G-21	G-22	G-23	G-25
Poles	1,2,3,4		1,2,3,4	1,2,3,4	1,2	1,2,3,4	1,2,3,4
Sealing	IP65	IP65	IP65	IP65	IP65	IP65	IP65
Back panel sealing	No	No	No	No	No	No	Option
Illuminated	Yes	Yes	No	No	No	No	Yes
Maximum current	16A 250VAC 12A 12VDC	16A 250VAC 12A 12VDC	16A 250VAC 12A 12VDC	16A 250VAC 12A 12VDC	2,5A 380VAC AC-15	16A 250VAC 12A 12VDC	6A 250VAC 6A 12VDC
Panel cut-out							
Ø22mm	X	X	X	X	X	X	X
Ø30mm	X	X	X	X			X
Flush mounting	Yes	Yes	Option	Option	No	Option	Yes
Terminal options							
Solder lugs							X
Quick-connect	Option	Option	Option	Option	Option	Option	X
Screw	X	X	X	X	X	X	
PCB Mounting	No	No	No	No	No	No	Option

Sealing boots



Section H of full-line catalogue

For toggle, pushbutton and rocker switches

H 2

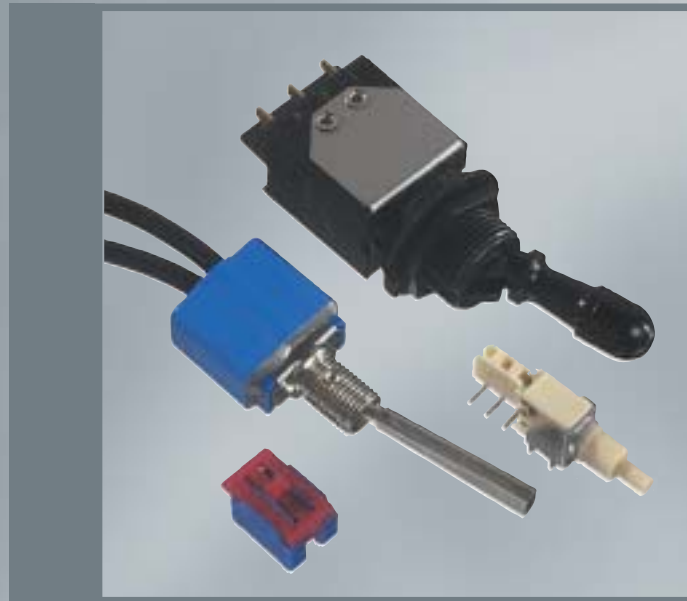
Indicators / Accessories Hardware



Section I of full-line catalogue

VL	Professional LED indicators	I 2
B	15A and 25A terminal posts	I 4
20 to 90	Security caps	I 6
	Hardware	I 11

Custom products



Section J of full-line catalogue

APEM's capability to develop custom products

APEM's experienced switch design team, advanced development tools and vertical integration enable the company to develop products beyond conventional switches.

Our solutions range from special actuators or terminals to innovative products developed entirely to customer's specifications. The highest level of integration is achieved with modules combining several technologies to offer added value and reduced cost.



CUSTOM SWITCHES 1

LEVEL 1

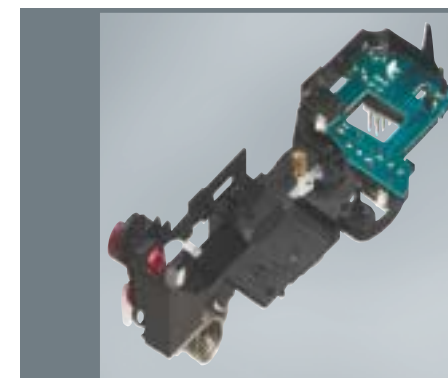
These switches featuring particular actuator or terminals are catalogue products adapted to meet a specific customer need.



CUSTOM SWITCHES 2

LEVEL 2

These switches are entirely developed to APEM customers' specifications.



INTEGRATED MODULES

The integration of the different functions begins at the design stage and results in higher product reliability, improved performance, reduced weight and easier assembly.

Each module is an innovative solution and therefore requires specific tooling.

APEM, a switch panel manufacturer

The switch panel combines both functional and decorative elements. Typically, it represents one of the most important visual features of the equipment. But it also has a switching element so its design and manufacture require faultless reliability, just like professional switches.

APEM offers several technologies covering a wide range of applications, from industrial equipment to vending machines to military equipment.



MEMBRANE SWITCH PANELS

Membrane switch panels carry out switching functions and enhance the final product with a tailored decorative appearance. They consist of several layers of polyester and adhesive.



RUBBER KEYPADS

Rubber keypads consist of a silicone overlay and a flexible or rigid circuit. This technology is adapted for large production runs.



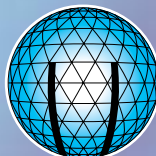
METAL KEYPADS AND KEYBOARDS

Stainless steel keypads and keyboards are particularly resistant to harsh environments: extreme climatic conditions, vandalism, stains...



SPECIFIC SWITCH PANELS

In addition to the switching function, specific switch panels incorporate several other functions such as: illumination by LED, backlighting with one or two intensity levels, EMC protection, sealing, connection, support, mounting...



A P E M

Addresses of sales subsidiaries and distributors network on
www.apem.com