a world of switching capabilities

STAINLESS STEEL KEYBOARDS

FOR HARSH ENVIRONMENTS

APEM ITALIA

ERMEC
Distribución de componenetes eléctricos y electrónicos

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APEM Italia offers a range of security keyboards mounted on printed circuits, equipped with stainless steel front face and keys. This range consists of three product series featuring different security levels and key travel.

The Company proposes numeric or alphanumeric keypads and keyboards, and specific products with a large choice of options : backlighting, heating, display windows, specific markings, Braille alphabet, associated electronics, trackball...

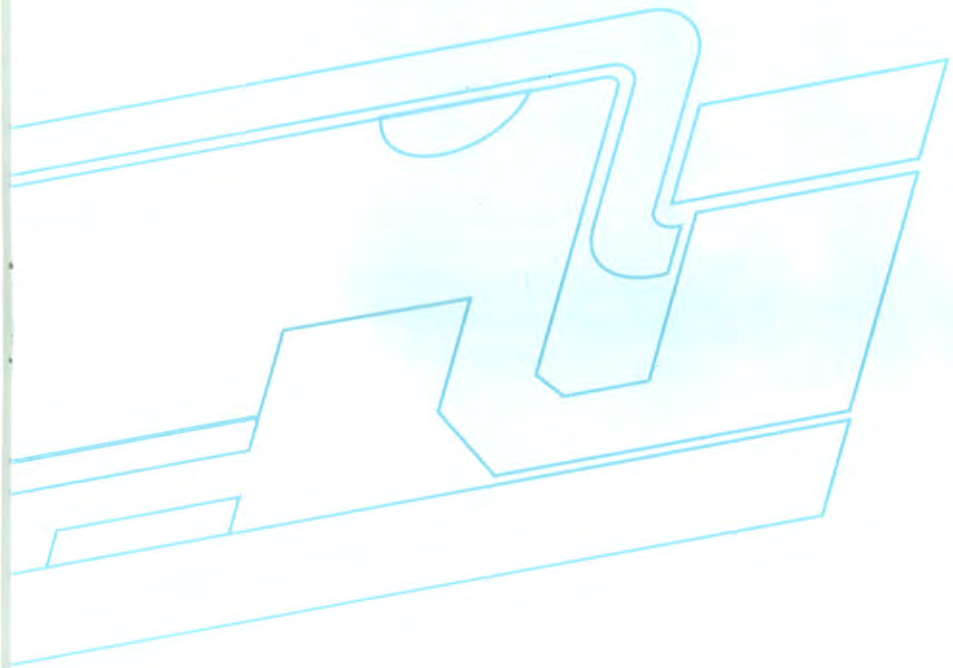
The products are manufactured at Marene, in the North of Italy, in an ISO 9001 certified plant.

APEM Italia is a manufacturing and sales subsidiary of the APEM Group, one of the world's largest manufacturers of switches and switch panels.

STAINLESS STEEL KEYBOARDS

These keyboards are suitable for applications in harsh environments. Their construction and the materials used allow them to withstand extreme climatic conditions or vandalism. Moreover, chemical or laser engraving of characters provide excellent resistance to wearing off.

All the keyboards of the range feature tactile feedback and IP 65 front panel sealing.



FOR HARSH ENVIRONMENTS

recommended applications

Access control
For resistance to vandalism: residential controllers, car park entries, tolls, securitized rooms, lifts...

Interactive information kiosks
For resistance to intensive use in the street or in public places: internet kiosks, hotel reservation kiosks, train/planes schedule information kiosks...

Food, pharmaceutical and medical industry
For reliability and hygiene: medical equipment, instrumentation...

Harbor and marine equipment
For resistance to salt spray: harbor engines, boat control boards...

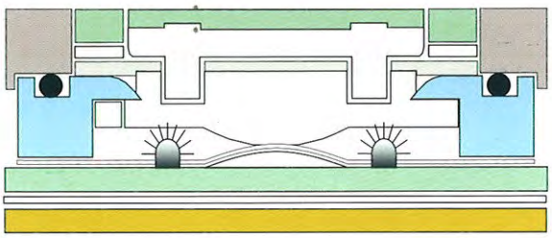
Military applications
For ruggedness and resistance to EMI: vehicles, communication interfaces...

ATM's
For resistance to vandalism and intensive use: ATM's for bank notes, transport tickets...

9 SERIES "HIGH SECURITY"

standard or specific models

- Vandal proof
- Chemical key engraving
- Excellent EMI resistance
- Intensive use: 3 million operations
- Stainless steel thickness: 2.5 mm to 4 mm
- IP 65 front of panel sealing (IEC 529)
- Interface on request, with or without encoding



mechanical specifications

Contact force:	2.5 to 4 N
Contact travel:	0.5 mm
Number of operations:	3×10^6
Sealing:	IP 65
Trackball:	IP 65 static
Marking	chemical engraving

electrical specifications

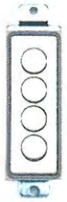
Nominal voltage:	24 V
Max. power:	2 W
Contact resistance:	< 10 ohms
Dielectric strength:	250 V
Insulation resistance:	> 100 M ohms

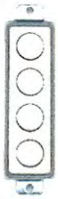
climatic specifications

Operating temperature:	-20°C to +70°C
With standard interface:	0°C to +70°C
With specific interface:	-20°C to +70°C
Storage temperature:	-40°C to +85°C

STANDARD KEYPADS & KEYBOARDS

4 keys


T09 004 00 03 000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T09 004 00 01 000

T09 004 00 02 000

12 and 16 keys

12 keys

T09 012 00 03 001

16 keys

T09 016 00 03 002

12 keys

T09 012 00 01 001

16 keys

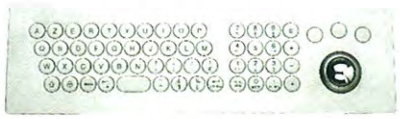
T09 016 00 01 002

alphanumeric

55 keys

T09 055 00 03 QWO

55 keys
with trackball


T09 055 02 03 AZO

74 keys
with trackball

T09 074 01 03 QWO

Available in AZERTY, QWERTY or QWERTZ versions

SPECIFIC KEYBOARDS

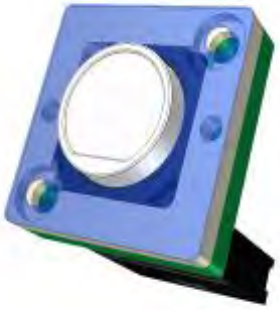
Specific customized keyboards can also be developed: with display windows, Braille alphabet, backlighting, heated for cold weather environment, color engraving...

APEM Italia

Series 82

GENERAL OVERVIEW

- Round keys diam. 14mm, with AISI316L stainless steel keytops, and custom marking layout chemically engraved
- Switching by stainless steel dome (50mA)
- Rear panel mounting
- AISI304 stainless steel front frame, • 2.5mm
- IP65, IK07 (impact resistance 6 joules)



Hairderssers seats control

Domotic remote control

Access control

PRODUCT SPECIFICATION

APEM ITALIA

Technical Characteristics

"serie 8" Keyboards

Construction:

Front Panel	Stainless Steel AISI 316 L 2 mm (Punched and brushed / grain 220)
Keys	ABS / PA6 Nylon (back light versions) → U.L.V0.
Key tops	Stainless steel AISI 316 L 0,5 mm (Chem. Etch. and brushed / grain 220)
Support	CEM1 / FR4 (back light versions) Printed Circuit Board 1,6/2 mm U.L.V0.
Key Holder/Spacer	ABS / Polycarbonate 2 mm → U.L.V0.
Sealing	Silicon sheet 0,5 mm on PCB + Neoprene O-Ring on front face.
Contacts	St. St. Snap Domes 12 mm.
Connecting	Standard codes with 10 Ways Ribbon male straight header.

Mechanical and Electrical Characteristic:

Actuator type	Stainless Steel Snap Domes AISI 304 Diam. 12 mm.
Contact force	4 N ± 0,5 N (3,5 N ± 0,5 N for Back Light versions)
Stroke	0,5 mm
Contact resistance	< 10 ohm (Gold plated PCB), - < 200 ohm (Graphite contact)
Contact Bounce	< 0,5 mS (On), < 6 mS (Off)
Peak current	50 mA (Gold plated PCB) - 20 mA (Graphite contact)
Insulation resistance	> 1Gohm (@ 500 V)
Power Max.	1,2 W at 24 Vcc - 0,5 W at 24 Vcc (Graphite contact)
No. of transitions	> 1×10^6
Back lighting (Option)	1 LED with limit resistor (5Vcc or 12Vcc - 24Vdc on request)

Environmental conditions:

Operating temperature	- 20 ÷ + 70 ℃
Storage temperature	- 40 ÷ + 85 ℃ (-30 ℃ for Back light versions)
Relative humidity	5 ÷ 95 % RH (With no condensation)
Frontal protection	IP 66
Frontal protection (trackball version)	IP 65 (not moving the trackball) IP 54 (moving the trackball)

PRODUCT SPECIFICATION

APEM ITALIA

Technical Characteristics

"serie 8" Keyboards

OTHER PHYSICAL AND MECHANICAL PROPERTIES

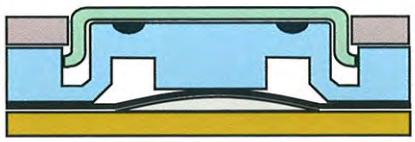
▪ **PROTECTION AGAINST SOLID BODIES:** Level 6 according with NF C20-010
▪ **PROTECTION AGAINST LIQUIDS:** Level 6 according with NF C 20-010 (on front side without trackball).
▪ **MECHANICAL PROTECTION:** Level IK 7 (according with NF C 20-010 (frontal impact force = 2,00 joules).
▪ **WASHABILITY:** Resistant to most common-use detergents and several solvents.
▪ **ABRADABILITY:** Very good, because characters on the keys are realized using painting (Epoxy Bi-Component Resin) deposed in a 250 µm Chemical Etching.
▪ **DUST RESISTANCE:** On front side up to fine dust (talc).
▪ **FLAME RESISTANCE:** 30 sec. with lighters, matches, cigarettes (vertical pos. with direct flame on the keys).
▪ **SALT FOG RESISTANCE:** 96H AT +35°C NaCL 5% (on front side after assembling).

PROTECTION IS NOT GUARANTEED AGAINST:
▪ SPECIAL ACIDS OR SOLVENTS.
▪ RESINS, PAINTS OR SURFACE HARDENING TREATMENTS.

7 SERIES "SECURITY"

standard or specific models

- Good security level
- Laser key engraving
- Flush keys
- IP 65 front of panel sealing
- Stainless steel thickness: 2 mm
- PS2 standard interface



mechanical specifications

Contact force:	4 N +/- 0,5 N
Contact travel:	0.5 mm
Number of operations:	1 x 10^6
Sealing:	IP 65
Trackball:	IP 65 static
Marking:	laser

electrical specifications

Nominal voltage:	24 V
Max. power:	2 W
Contact resistance:	< 10 ohms
Dielectric strength:	250 V
Insulation resistance:	> 100 M ohms

climatic specifications

Operating temperature:	-20°C to +70°C
With standard interface:	0°C to +70°C
With specific interface:	-20°C to +70°C
Storage temperature:	-40°C to +85°C

standard alphanumeric keyboards

Available in AZERTY, QWERTY or QWERTZ versions

55 keys

T07 055 00 07 QWO

55 keys
with trackball

T07 055 02 07 QWO

74 keys
with trackball

T07 074 03 07 QZO

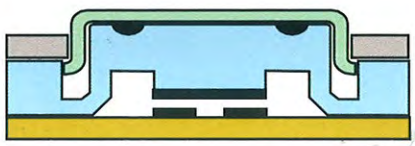
On specifications, APEM Italia also develops and produces specific models based on the technology of the 7 series.

70 SERIES

"SECURITY AND LONG TRAVEL"

particulary suitable for interactive kiosks

- Keyboards for rapid data entry
- Alphanumeric models
- Stainless steel thickness: 2 mm
- AZERTY, QWERTY or QWERTZ versions, with or without trackball
- Optional key customization
- PS2 standard interface



specific mechanical specifications of the 70 series

Contact force:	1.5 N +/- 20%
Contact travel:	1.3 mm
Number of operations:	1 x 10^6

specific electrical specifications of the 70 series

Nominal voltage:	12 V
Max. power:	1 W

The other specifications are the same as those of the 7 series

TABLE SERIES			8	82	9
FRONT FRAME			Compulsory	Optional	Optional
FRONT FRAME THICKNESS AGAINST TYPE OF KEYS ASSEMBLY	1,5mm		raised keys by 0,5mm	raised by 1,0mm	No
	2,0mm		std	raised by 0,5mm	possible only with keytop thickness 0,5mm non illuinated - raised by 0,5mm
	2,5mm		recessed keys by 0,5mm	std	std
	3,0mm		recessed keys by 1,0mm		recessed keys by 0,5mm
KEYTOPS THICKNESS	illuminated		0,5mm	0,5mm	0,5mm
	non illuminated		0,5mm	0,5mm	1,0mm
BACKLIGHT			Optional	Optional	Optional
	1 led/key		Yes	Yes	Optional
	2 leds/key		Optional	Optional	Yes
	4 leds/key		Optional	Optional	Optional
KEY SIZE	Square		12,5 x 12,5mm (PQR)	No	17 x 17mm (VQR)
			15 x 15mm (PQ)	No	22 x 22mm (VQ)
	Rectangular		12,5 x 29,5mm (PQR) (n. 2 snapdomes per key)	No	17 x 27mm (VQR) (n. 1 snapdome per key)
			15 x 34mm (PQ) (n. 2 snapdomes per key)		
	Round		No	Ø 14mm	Ø 17mm (VR)
					Ø 20mm (V)
					Ø 24mm
	Oval		No	No	17 x 37mm (VR)
					20 x 45mm (V)
STANDARD MODELS	T1	Non illuminated	No	T1PR	T1VR - T1V - T1VQR - T1VQ
		Illuminated	No	T1PRL - T1PR2L	T1VRL - T1VL
	T4	Non illuminated	T4PQR - T4PQ	T4PR - T4PRF	T4VR - T4V - T4VQR - T4VQ
		Illuminated	T4PQRL - T4PQL	T4PRL - T4PRLF	T4VRL
	T12	Non illuminated	T12PQR - T12PQ	T12PR - T12PRF	T12VR - T12V
		Illuminated	T12PQRL - T12PQL	T12PRL - T12PRLF	T12VRL
	T15	Non illuminated	T15PQR	No	No
		Illuminated	T15PQRL		
	T16	Non illuminated	T16PQR - T16PQ	T16PR - T16PRF	T16VR - T16V
		Illuminated	T16PQRL - T16PQL	T16PRL - T16PRLF	T16VRL
	T55	Non illuminated	No	No	T55VPCBI
		Illuminated			
	T74	Non illuminated	No	No	T74VPCBI
		Illuminated			
	T93	Non illuminated	No	No	T93VPC
		Illuminated			
PROTECTION LEVEL	IK		IK07	IK07	IK09
	IP		IP65	IP65	IP65
ACTUATION			St. St Snapdome (50mA)	St. St Snapdome (50mA)	St. St Snapdome (50mA)
CUSTOM VERSION			Upon request	Upon request	Upon request

LEGENDA	PQ = square or rect. keys 15mm	PR = round keys 14mm no front frame
	PQR = square or rect. Keys 12,5mm	PRF = round keys 14mm with front frame
	V = round key 20mm	VQ = square key 22mm
	VR = round key 17mm	VQR = square key 17mm
	L = illuminated version	

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APEM ITALIA

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