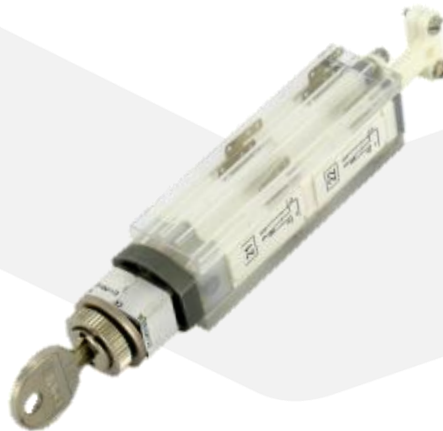




TYPE E KEY SWITCHES



CONTROL AND SIGNALING SOLUTIONS FOR HARSH ENVIRONMENTS



TYPE E KEY SWITCHES



Robust

Long life durability :

- A reliability recognized for more than 30 years
- Qualified according to nuclear standards IEEE 323 & 344
- A foolproof mechanical and electrical robustness
- Applications in harsh environments

Configurable

Adaptable to your applications :

- Very numerous available functions:
 - Turn with key
- Different types of contacts for all your diagrams and functions
- Many key combinations available

APPLICATION

> Electrical equipment's control.

- These switches have a particularly strong design which allows them very numerous applications in severe environments (shocks, vibrations, temperature, radiations, earthquakes).
- This range of product is a reference for more than 30 years in control room of nuclear power plants worldwide. It also equips very numerous electrical distribution plants and railways electrical dispatch.
- This range allows to realize all your functions of control key switches .



Codification des produits

Presentation / Contact / Special assembly / Command/ Escutcheon plate / Signaling and lamps / Function / Contacts scheme / Key number / Accessories //

Eg: E / - / - / 50 / - / - / 241 / 2A1 / 612 / Z+ST //

Presentation

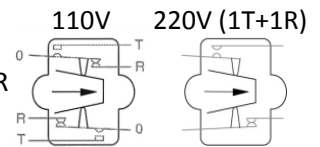
E Key switches (Drilling Ø14,2)

E50



Contacts

- Product equipped with standard 110V change-over contacts
- 2** Product equipped with 220V contacts : configurable in 2T or 2R or 1T+1R



Special assembly

- C24** Product equipped with a special front part which allow to install it on a mosaic panel □24
- C25** Product equipped with a special front part which allow to install it on a MAFELEC C25 mosaic panel □25
- C30** Product equipped with a special front part which allow to install it on a mosaic panel □30
- 2-4** Indication of a special positioning different from the standard of the function (eg. = position 2-4)
- SPE** Other special assembly or special realization at request

C25



Codification des produits

Presentation / Contact / Special assembly / Command/ Escutcheon plate / Signaling and lamps / Function / Contacts scheme / Key number / Accessories //

Eg: E / - / - / 50 / - / - / 241 / 2A1 / 612 / Z+ST //

Command

50 Command by Ronis key (Drilling Ø 14,2)

E50



Escutcheon plate

- 01 Round chromed symbol Ø19 (for isolator)
- 02 Square chromed symbol □19 (for circuit breaker)
- 11 Round black symbol Ø19 (for isolator)
- 12 Square black symbol □19 (for circuit breaker)
- 04 Round chromed escutcheon Ø25 (for engraving)
- 05 Square chromed escutcheon □25 (for engraving)
- 14 Round black escutcheon Ø25 (for engraving)
- 15 Square chromed escutcheon □25 (for engraving)
- G « G » in complement of PCC or PRC indicate that product is engraved
(symbols cannot be engraved)
Possibility of engraving on request

01



11



05G



Signaling and lamps

- Not applicable : This section is not applicable for key switches

Presentation / Contact / Special assembly / Command/ Escutcheon plate / Signaling and lamps / **Function / Contacts scheme** / Key number / Accessories //

Eg: E / - / - / 50 / - / - / 241 / 2A1 / 612 / Z+ST //

Function

241

Function number

Eg : function 241 = 2 fixed positions (9h-12h)

Key free in 3 and captive in 1

(Refer to currently used diagrams and functions summary tables)

241



The function number defines: positions, actions (Turn with fixed positions, with impulse; ...), key release positions. The function number combined to contact scheme define completely the functioning of the switch.

Contact scheme

2A1

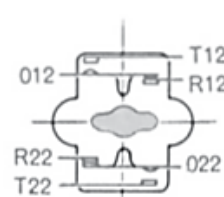
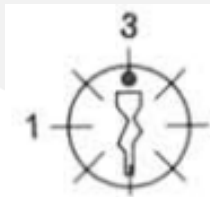
We define the correct contact scheme in function of your needs of diagrams , type of electrical contacts, and used positions :

2 : The first number define the number of contacts :

eg : 2 change-over contacts

A1 : A combination of a letter and a number indicate that the second electrical stage is a turn stage equipped with an A cam positioned in 1

Example of configuration E/.../50/.../241/2A1/...



Codification des produits

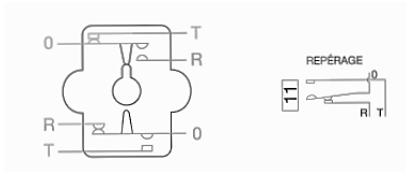
Presentation / Contact / Special assembly / Command/ Escutcheon plate / Signaling and lamps / Function / **Contacts scheme** / Key number / Accessories //

Eg: E / - / - / 50 / - / - / 241 / 2A1 / 612 / Z+ST //

Contact scheme

110V Contacts stages :

A switch can be equipped from 1 to 4 stages (2 to 8 change-over contacts). Standard contacts are in silver. For low current application the contacts can be in an gold-silver alloy : option Z in the accessories codification.



A stage is constituted of 2 change-over contacts arranged symmetrically in relation to the horizontal plane.

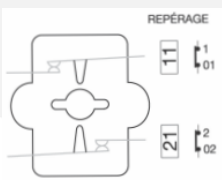
A contact consists of an change-over switch with common point the 3 terminals of which are marked. O (common point) T (NO) R (NC)

220V Contacts stages (3 types of stages available):

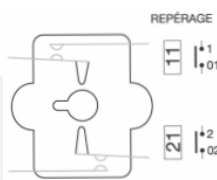
A switch can be equipped from 1 to 4 stages (beyond, consult us). 220V contacts are available in silver only.

Stage 2R :

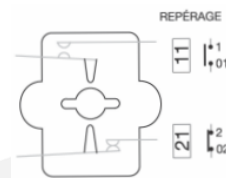
Consisting of 2 Normally Close contacts.

**Stage 1T :**

Consisting of 2 Normally Open contacts.

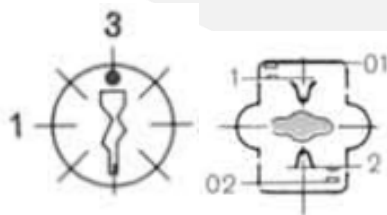
**Stage 1T+R :**

Consisting of 1 Normally Open contact + 1 Normally Close contacts



Configuration example : E/2/.../50/.../ 241 /2A1 /...

(Stage contacts type 220V is specify by the number **2** in the beginning of the reference)



Codification des produits

Presentation / Contact / Special assembly / Command/ Escutcheon plate / Signaling and lamps / Function / Contacts scheme / Key number / Accessories //

Eg: E / - / - / 50 / - / - / 241 / 2A1 / 612 / Z+ST //

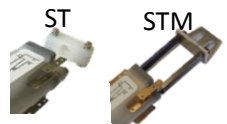
Key number

- 612** Example of standard key number for a E50 switch , Ronis barrel (*many others key combination on request, eg : 608, 609, 689, 950...*)



Accessories

- Z** Use of contacts in alloy Gold-Silver in replacement of contacts in alloy Silver/Nickel
(*Recommended for low current level applications*)
- ST** Plastic cable support for rear cable outlet (*included in standard*)
- STM** Metallic cable support for rear cable outlet
- SR** Resistance support (useful when you need to reduce the supply voltage of the lamp)
- CP** Plastic translucent contacts cover (IP20)

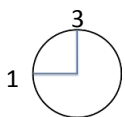


Currently used diagrams

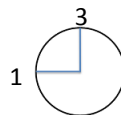
Turn with key

i Refer to function summary table to determinate key release positions

- **Function 201 or 241 : 2 fixed positions at 90° (1-3) : 1 to 4 Turn stages**



Position =>	Position 1	Position 3
Contact labels	Fixed position	Fixed position
O11 - R11		X
O11 - T11	X	
O21 - R21		X
O21 - T21	X	
O12 - R12	X	
O12 - T12		X
O22 - R22	X	
O22 - T22		X
O13 - R13		X
O13 - T13	X	
O23 - R23		X
O23 - T23	X	
O14 - R14	X	
O14 - T14		X
O24 - R24	X	
O24 - T24		X



Position =>	Position 1	Position 3
Contact labels	Fixed position	Fixed position
O11 - R11		X
O11 - T11	X	
O21 - R21		X
O21 - T21	X	
O12 - R12		X
O12 - T12	X	
O22 - R22		X
O22 - T22	X	
O13 - R13		X
O13 - T13	X	
O23 - R23		X
O23 - T23	X	

Currently used diagrams

Turn with key



Refer to function summary table to determinate key release positions

- **Function 202 or 242 : 2 fixed positions at 90° (1-3) : 1 to 4 Turn stages**

Position =>	Position 3	Position 5
Contact labels	Fixed position	Fixed position
O11 - R11	X	
O11 - T11		X
O21 - R21	X	
O21 - T21		X
O12 - R12		X
O12 - T12	X	
O22 - R22		X
O22 - T22	X	
O13 - R13	X	
O13 - T13		X
O23 - R23	X	
O23 - T23		X
O14 - R14		X
O14 - T14	X	
O24 - R24		X
O24 - T24	X	

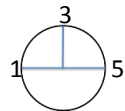
Position =>	Position 3	Position 5
Contact labels	Fixed position	Fixed position
O11 - R11	X	
O11 - T11		X
O21 - R21	X	
O21 - T21		X
O12 - R12	X	
O12 - T12		X
O22 - R22	X	
O22 - T22		X
O13 - R13	X	
O13 - T13		X
O23 - R23	X	
O23 - T23		X

Currently used diagrams

Turn with key

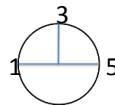
i Refer to function summary table to determinate key release positions

- **Function 205 or 245 : 3 fixed positions at 90° (1-3-5) : 1 to 3 Turn stages**



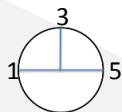
2B1
4B1B1
6B1B1B1

Position =>	Position 1	Position 3	Position 5
Contact labels	Fixed position	Fixed position	Fixed position
O11 - R11	X	X	
O11 - T11			X
O21 - R21		X	X
O21 - T21	X		
O12 - R12	X	X	
O12 - T12			X
O22 - R22		X	X
O22 - T22	X		
O13 - R13	X	X	
O13 - T13			X
O23 - R23		X	X
O23 - T23	X		



2B5
4B5B3
6B5B3B1

Position =>	Position 1	Position 3	Position 5
Contact labels	Fixed position	Fixed position	Fixed position
O11 - R11		X	X
O11 - T11	X		
O21 - R21	X	X	
O21 - T21			X
O12 - R12	X		X
O12 - T12		X	
O22 - R22	X	X	X
O22 - T22			
O13 - R13	X	X	
O13 - T13			X
O23 - R23		X	X
O23 - T23	X		



2D3
4D3E5

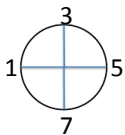
Position =>	Position 1	Position 3	Position 5
Contact labels	Fixed position	Fixed position	Fixed position
O11 - R11	X		
O11 - T11		X	X
O21 - R21		X	X
O21 - T21	X		
O12 - R12			X
O12 - T12	X	X	
O22 - R22	X	X	
O22 - T22			X

Currently used diagrams

Turn with key

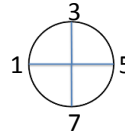
i Refer to function summary table to determinate key release positions

- **Function 213 or 249 : 4 fixed positions at 90° (1-3-5-7) : 1 to 4 Turn stages**



Position =>	Position 1	Position 3	Position 5	Position 7
Contact labels	Fixed position	Fixed position	Fixed position	Fixed position
O11 - R11	X	X		X
O11 - T11			X	
O21 - R21		X	X	X
O21 - T21	X			
O12 - R12	X		X	X
O12 - T12		X		
O22 - R22	X	X	X	
O22 - T22				X

2B1
4B1B3



Position =>	Position 1	Position 3	Position 5	Position 7
Contact labels	Fixed position	Fixed position	Fixed position	Fixed position
O11 - R11	X		X	X
O11 - T11		X		
O21 - R21	X	X	X	
O21 - T21				X
O12 - R12	X	X		X
O12 - T12			X	
O22 - R22		X	X	X
O22 - T22	X			
O13 - R13	X	X	X	
O13 - T13				X
O23 - R23	X		X	X
O23 - T23		X		
O14 - R14		X	X	X
O14 - T14	X			
O24 - R24	X	X		X
O24 - T24			X	

2B1
4B1B3
6B1B3B7
8B1B3B7B5

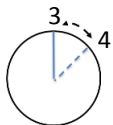
Currently used diagrams

Turn with key

i Refer to function summary table to determinate key release positions

- **Function 627 or 629** : 1 fixed position (3) + 1 impulse position (4 or 2) : 1 to 4 Turn stages

Function 627 :

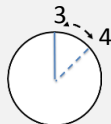


Position =>	Position 3	Position 4
Contact labels	Fixed position	Impulse position
O11 - R11	X	X
O11 - T11		
O21 - R21	X	
O21 - T21		X
O12 - R12	X	X
O12 - T12		
O22 - R22	X	
O22 - T22		X
O13 - R13	X	X
O13 - T13		
O23 - R23	X	
O23 - T23		X

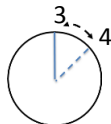
Function 629



Position =>	Position 2	Position 3
Contact labels	Impulse position	Fixed position
O11 - R11	X	X
O11 - T11		
O21 - R21		X
O21 - T21	X	
O12 - R12	X	X
O12 - T12		
O22 - R22		X
O22 - T22	X	
O13 - R13	X	X
O13 - T13		
O23 - R23		X
O23 - T23	X	



Position =>	Position 3	Position 4
Contact labels	Fixed position	Impulse position
O11 - R11		X
O11 - T11	X	
O21 - R21	X	
O21 - T21		X



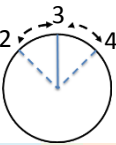
Position =>	Position 3	Position 4
Contact labels	Fixed position	Impulse position
O11 - R11	X	X
O11 - T11		
O21 - R21	X	
O21 - T21		X

Currently used diagrams

Turn with key

i Refer to function summary table to determinate key release positions

- **Function 631 : 1 fixed position (3) + 2 impulse positions (2-4) : 1 to 4 Turn stages**



Position =>	Position 2	Position 3	Position 4
Contact labels	Impulse position	Fixed position	Impulse position
O11 - R11	X	X	X
O11 - T11			
O21 - R21		X	X
O21 - T21	X		
O12 - R12	X	X	X
O12 - T12			
O22 - R22		X	X
O22 - T22	X		
O13 - R13	X	X	X
O13 - T13			
O23 - R23		X	X
O23 - T23	X		

2D2
4D2D2
6D2D2D2

- **Function 634 : 2 fixed positions (3-5) + 2 impulse positions (2-6) : 3 Turn stages**



Position =>	Position 2	Position 3	Position 5	Position 6
Contact labels	Impulse position	Fixed position	Fixed position	Impulse position
O11 - R11	X	X		
O11 - T11			X	X
O21 - R21			X	X
O21 - T21	X	X		
O12 - R12	X	X		
O12 - T12			X	X
O22 - R22			X	X
O22 - T22	X	X		
O13 - R13	X	X	X	
O13 - T13				X
O23 - R23		X	X	
O23 - T23	X			X

6D1D1A4

Functions summary table standard products

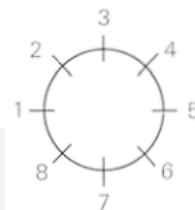
With fixed positions							With fixed and impulse positions							
	Positions at 45°			Positions at 90°			Positions at 45°			Positions at 90°				
	Key free	Key captive	code	Key free	Key captive	code	Fixed positions	Impulse positions	code	Fixed positions	Impulse positions	code		
2 posit.		2	243		1	201 241		4	627		5	626		
		4	244		5	202 242		2	629		1	628		
3 posit.		2-4	253		5-1	205 245		2-4	631		1-5	630		
		2-1	254					4	635		6	632		
		4-5 4	255 256					2	636		8	633		
														
4 posit.		4-5-6	257		5-7-1	250 250U ⁴ 213 213U ⁴	4 Positions including 2 impulse at 45°				2-6 Key captive in 2-5-6			
		2-1-8	258											
5 posit.		2-1-4-5	261				5 Positions including 2 impulse at 45°				6-8 Key captive in 1-5-6-8			
		4-5-6-7	280											
6 posit.		4-5-6-7-8	266											
7 posit.		2-1-8-4-5-6	269											
8 posit.		1-2-4-4-6-7-8	275 275U ⁴											

⁴ : units with one direction of rotation

1 : The underlined figure of the fixed positions corresponds to that of the key reference position

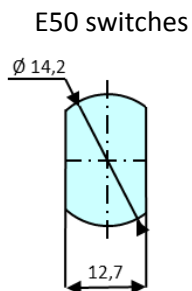
Other realizations possible on request.

Positions location



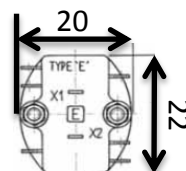
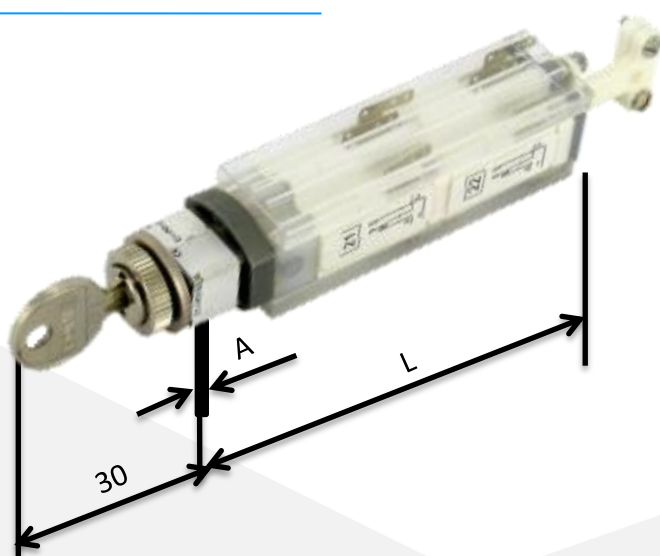
Dimensions

Drillings



i Refer to installation guide for type E switches for installation and maintenance.

Rear length



Function	Presentation	Positions	L				A	ST	SR
			1 stage	2 stages	3 stages	4 stages			
Turn	E50	Fixed	70	101	132	163	1,5-3	+24	+28
		Impulse	80	111	142	173			
		Fixed + impulse	90	121	152	183			

Electrical, mechanical, environmental characteristics

Electrical characteristics

Rated thermal current (I_{th})

4A

Dielectric strength

2000V-50Hz-1min

Rated alternate current (I_e) (AC)

Standard silver contacts	110 V contacts				220 V contacts			
Rated working voltages (V)	<= 60		110 127		<= 60		110 127	
AC-11 (A)	4		3		4		3	
AC-21 (A)	4		4		4		4	
AC-22 (A)	4		4		4		4	
AC-23 (A)	4		4		4		4	
Rated direct current (Ie) (DC)								
Standard silver contacts	110 V contacts				220 V contacts			
Rated working voltages (V)	24	48	60	110 127	24	48	60	110 127
DC-11 (A)	2,5	0,8	0,6	0,2	3,2	1,2	0,8	0,2
DC-21 (A)	4	2,5	1,8	0,5	4	4	2,5	0,65
DC-22 (A)	3	1	0,7	0,2	4	1,5	1	0,25
DC-23 (A)	2	0,75	0,5	0,15	3	1	0,75	0,2

Minimum utilization characteristics

Standard silver contacts

5V-50mA

Special Gold/Silver contacts

1V-10mA

Maximum connection (Cu only)

Rigid or flexible cable

By soldering

Fast-On Clips : 2,8 X0,3

2 X 1 mm² max
1 mm²

Electrical, mechanical, environmental characteristics

Mechanical and environmental characteristics

Mechanical strength	500 000 cycles of semi-intensive operation
Fitting	By central nut on panel 1,5 to 3 mm thick : The device does not have to support the weight of the cables
Terminals protection level	IP00 (without cover) – IP2X (with cover)