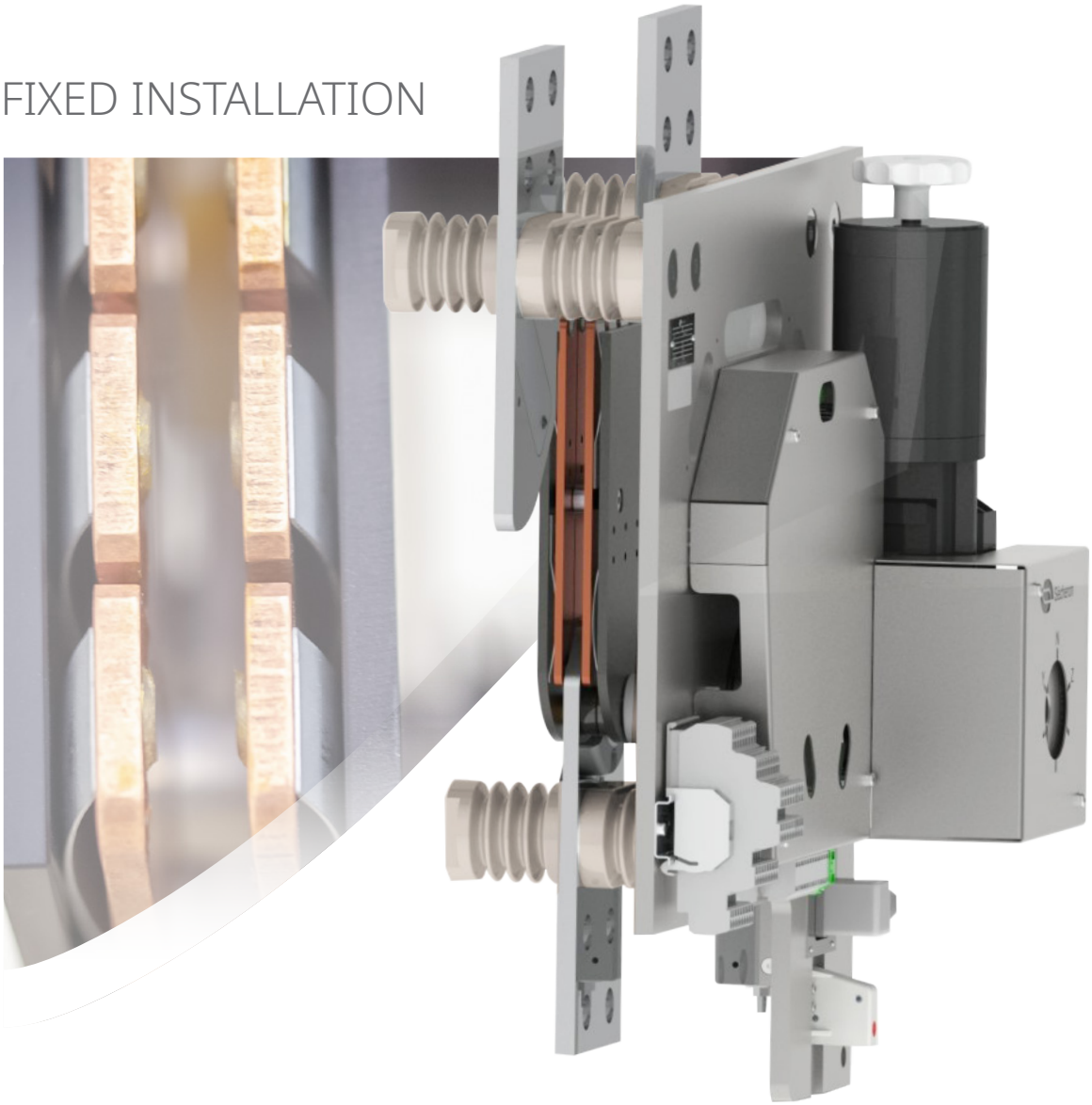
ELECTRICAL
SAFETY
SOLUTIONS

Sécheron

DISCONNECTOR

Type **SWI(N)18...**

FIXED INSTALLATION

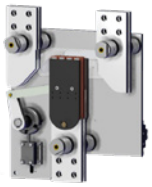


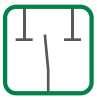
GENERAL INFORMATION

The **SWI(N)** off-load three positions device with the required clearance distances during switching is a complete range designed to cover all the applications to be met in DC traction power substations and other industrial applications. Its modular concept enables to build single pole or double poles, for rated operational voltage 1,800 V and rated operational currents from 2,000 to 6,300 A.

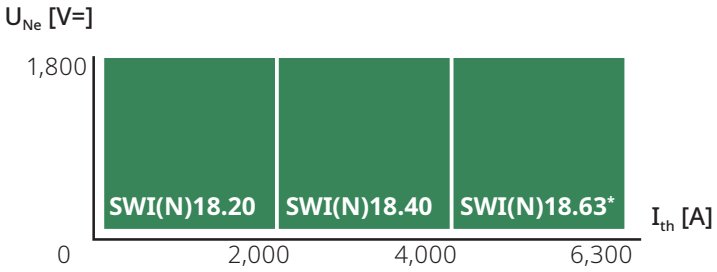
Installed inside cubicles, the **SWI(N)** device can be operated either manually or electrically, and the customer can select among standard options safety interlockings made via key lock and/or electromagnet. The severe testing procedures applied for the type testing as well as for the serial testing make the **SWI(N)** device a safe component with a unique design and a high level of reliability.

PRODUCT RANGE





SWI(N)18...
changeover switch with stopping in neutral position

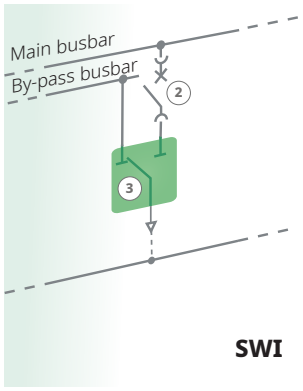


The selection of the appropriate current rating is function of the load cycle. Please refer to Overload capacity table page 5.

* SWI(N)18.63 (not available yet)
For any need, please contact Sécheron.

All products are available in 1 pole or 2 poles.

APPLICATIONS, TYPICAL EXAMPLES



SWI

2 DC circuit breaker, **UR**
3 Selector, **SWI**

MAIN FEATURES

- Rated operational voltage 1,800 V_{DC}
- Conventional free-air thermal current from 2,000 A to 6,300 A
- Safe with a high rated insulation voltage 3,000 V_{DC}
- 1 pole (2 poles versions on request)
- Reference standards: EN 50123-1/-3

MAIN BENEFITS

- Compact size.
- High rated short-time withstand current value.
- Safe with the high voltage circuit separated from the low voltage circuit.
- Silver-plated high voltage connections.
- Optional locking of the main contacts available with either key and/or electromagnet.
- High mechanical durability: 20,000 cycles minimum.
- Self cleaning contacts.
- High modularity to cover all necessary variants and options.
- Simple design with reduced number of parts.

HIGH MODULARITY

The below figures show the basic configuration of each **SWI(N)** device (for a current of 2,000 A and a voltage of 1,800 V_{DC}).

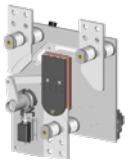
All these devices are also delivered in other configurations of current, voltage, operation and number of pole, thanks to a high industrialized modularity as shown below.

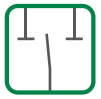
SELECTION OF OPERATION

SWI(N). Manual

SWI(N). Electric

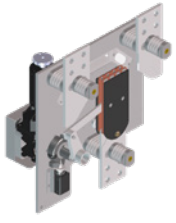
SELECTION OF APPLICATION



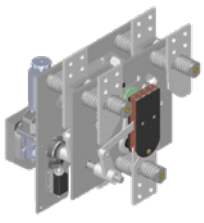


SWI(N)
Change over

SELECTION OF POLE NUMBER

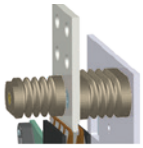


1 pole

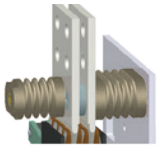


2 poles

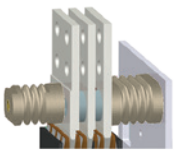
SELECTION OF RATED THERMAL CURRENT



2,000 A



4,000 A



6,300 A

DATA FOR PRODUCT SELECTION

	Symbol	Unit	SW...20	SW...40	SW...63
MAIN HIGH VOLTAGE CIRCUIT					
Rated operational voltage	U_{Ne}	[V_{DC}]		1,800	
Rated insulation voltage	U_{NM}	[V]		3,000	
Rated service current	I_{Ne}	[A]	2,000	4,000	6,300
Conventional free air thermal current (1)	I_{th}	[A]	2,000	4,000	6,300
Peak and rated short-time withstand current					
- for U_{Ne} 1,800 V	$\hat{I}_{Ncw}/I_{Ncw}/t/$	[kA]/[kA]/[s]		142/100/0.25	
Overvoltage category				OV4	
Rated power-frequency withstand voltage (2)					
- Pole - Pole	U_a	[kV]		11.0	
- Pole - Earth	U_a	[kV]		9.2	
Rated impulse withstand voltage (1.2/50 µs)					
- Pole - Pole	U_{Ni}	[kV]		24.0	
- Pole - Earth	U_{Ni}	[kV]		20.0	

(1) At Tamb = +40°C and tested with high voltage connections according to standard IEC/EN 60943. • (2) At 50 Hz and during 1 minute

LOW VOLTAGE AUXILIARY CIRCUIT					
Control circuit (motor and optional electromagnet lock)					
Nominal voltage	U_n	[V_{DC}]		24, 48, 60, 110, 125, 220	
Range of voltage				[0.8-1.1] U_n	
Motor nominal closing/opening power:					
- DC only		[W]		125	
Mechanical switching time (3)	t_c	[S]		< 3	
Electromagnet nominal power		[W]		~14	

(3) For motorized version, at nominal control voltage = Un and Tamb = +20°C. For SWI(N), switching time from left or right position to intermediate one and vice and versa.

Auxiliary contacts for main circuit and optional locks					
Type of contacts (refer to definition page 10)				Changeover (CO)	
Rated voltage		[V_{DC}]		24 to 220	
		[V_{AC}]		230	
Conventional thermal current	I_{th}	[A]		10	
Maximum breaking capacity at 110 V_{DC} and t=5 ms		[A]		0.75	
Minimum let-through current at 24 V_{DC} (7)		[mA]		10 (silver contacts)	

(7) For a dry and clean environment.

Low voltage interface					
Type of connection				Terminal block	
Insulation					
Rated power-frequency withstand voltage (8)	U_a	[kV_{rms}]		2	

(8) At 50 Hz and during 1 minute.

OPERATING CONDITIONS					
Installation				Indoors	
Altitude		[m]		≤ 2,000	
Working ambient temperature	T_{amb}	[°C]		- 25 to +40	
Humidity				Class 5k2	
Pollution degree				PD4	
Minimum mechanical durability	N	Cycles		20,000	

OVERLOAD CAPACITY

Application Duty Class - I_{Bd} [A] EN 50328 / IEC 62590		SW...20	SW...40	SW...63
	Class I	2,000	4,000	6,300
	Class V, VI, VII	2,000	3,000	4,200
	Class VIII	1,600	3,000	4,200

I_{Bd} : basic direct current

Class I	1 x I_{Bd}	continuously
Class V	a) 1 x I_{Bd} b) 1.5 x I_{Bd} c) 2.0 x I_{Bd}	continuously 2 hours - after a) 1 min - after a)
Class VI	a) 1 x I_{Bd} b) 1.5 x I_{Bd} c) 3.0 x I_{Bd}	continuously 2 hours - after a) 1 min - after a)
Class VII	a) 1 x I_{Bd} b) 1.5 x I_{Bd} c) 4.5 x I_{Bd}	continuously 2 hours - after a) 15 s - after a)
Class VIII	a) 1 x I_{Bd} b) 1.5 x I_{Bd} c) 2.0 x I_{Bd}	continuously 2 hours - after a) 1 min - after b)

INFORMATION FOR PRODUCT INTEGRATION

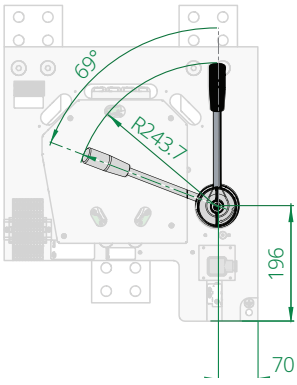
MAIN DIMENSION

The DIN-ISO 2768-1 coarse tolerances are applied to these dimensions.
All dimensions are in mm.

Note: Each SW can be equipped with manual or motorized (DC only) operation.

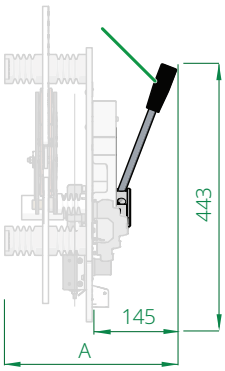
OPERATION

MANUAL



Front view

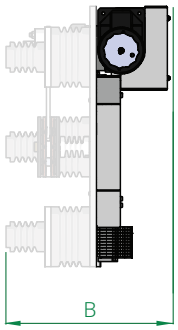
Removable handle



Side view

ELECTRIC

DC CONTROL



Top view

DIMENSIONS	A	B
SWI(N)18.20 - 1 pole / 2 poles	295 / 433	273 / 411
SWI(N)18.40 - 1 pole / 2 poles	315 / 473	293 / 451
SWI(N)18.63* - 1 pole / 2 poles	337 / 517	313 / 495

All dimensions are in mm

INFORMATION FOR PRODUCT INTEGRATION

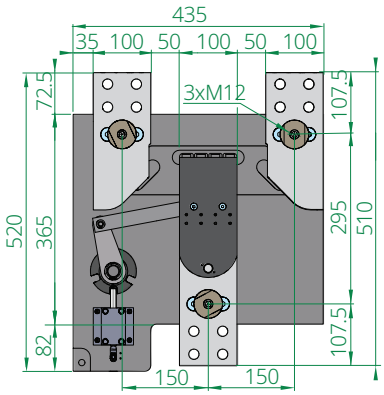
MAIN DIMENSION

The DIN-ISO 2768-1 coarse tolerances are applied to these dimensions.
All dimensions are in mm.

Note: Each SW can be equipped with manual or motorized (DC only) operation.

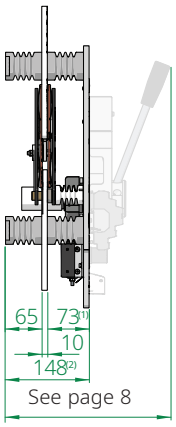
SWI(N).18...

SWI(N)

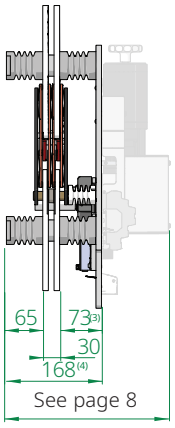


SW.18...
1-POLE
configurations

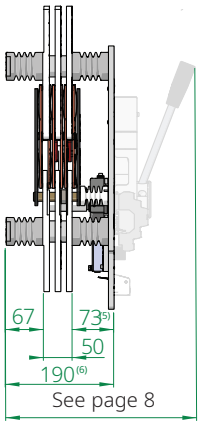
SW.18.20



SW.18.40

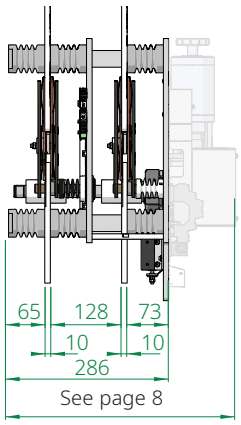


SW.18.63

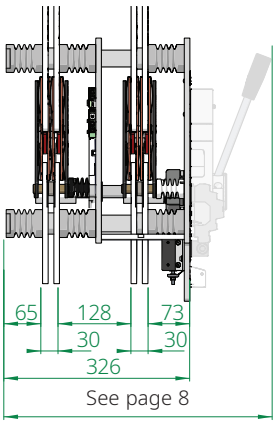


SW.18...
2-POLE
configurations

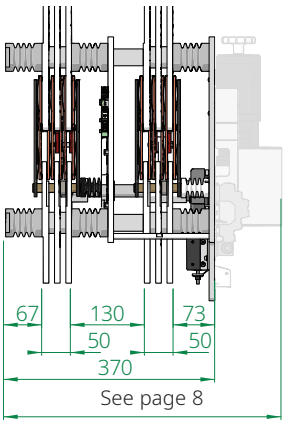
SW.18.20



SW.18.40



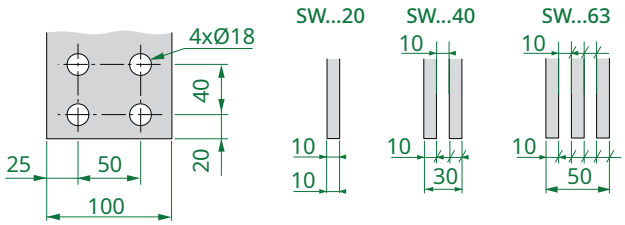
SW.18.63



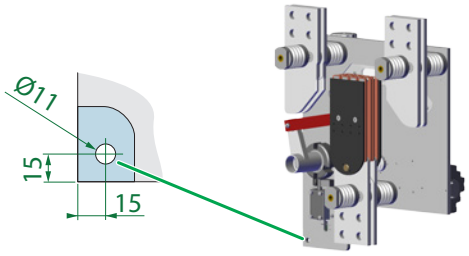
DETAILS OF THE HIGH VOLTAGE CONNECTIONS

The busbars or cables must be mechanically fixed outside the SW disconnector, and their contact surface must be parallel to the HV connections:

FOR ALL DEVICES



DETAILS OF THE EARTH CONNECTION ON THE BASE PLATE



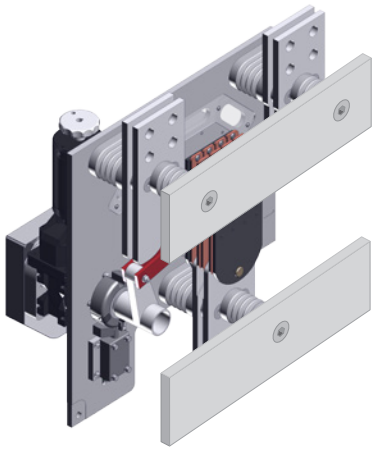
WEIGHTS

SWI(N)

1 pole	Type		
Control	**18.20**	**18.40**	**18.63[1]**
MA [kg]: ± 2 kg	18	25	32
MO [kg]: ± 2 kg	24	31	38

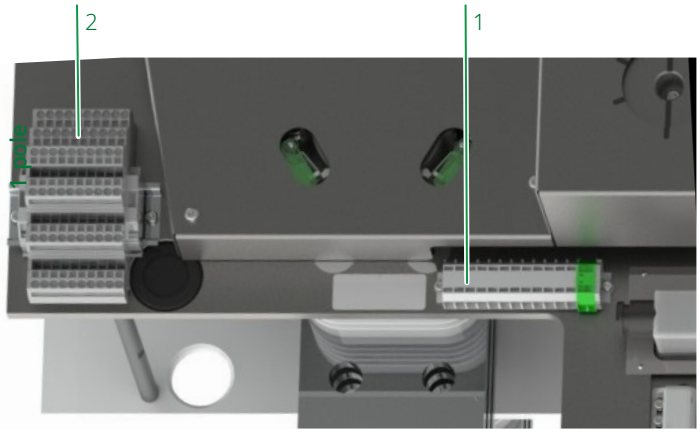
2 poles	Type		
Control	**18.20**	**18.40**	**18.63[1]**
MA [kg]: ± 2 kg	33	46	60
MO [kg]: ± 2 kg	39	52	66

SWI(N) FIXATIONS



The SW series switches are fixed vertically as shown here by means of M12 screws.

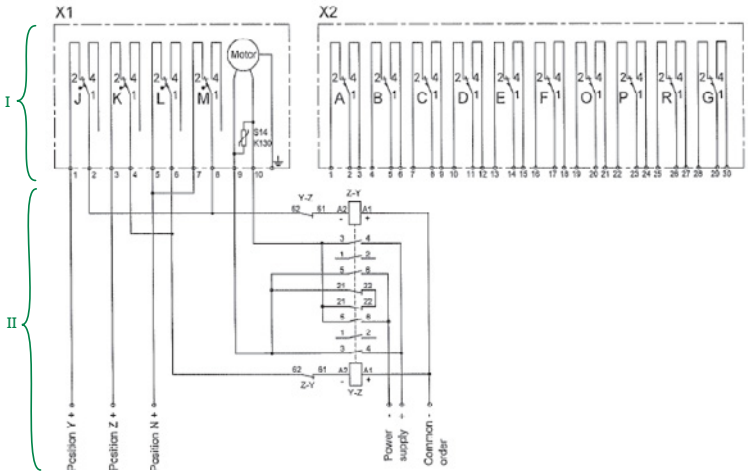
LOW VOLTAGE CONTROL AND INTERFACES



Legend of the schemes:

1. Terminal block for motor control only.
2. Terminal block to connect the auxiliary switches of each pole for SW open/close status (two poles version).

CONTROL DIAGRAM FOR DC VOLTAGE MOTOR



Control scheme valid for all SW...

As the motor needs to be dynamically braked, make the external circuit (II) as shown on this diagram:

Legend of the schemes:

I. SW scope.

II. Customer scope.
Both contactors K1 and K2 must be mechanically interlocked to avoid them to be triggered at the same time; and each of them must have three NO contacts.

LOCKING SYSTEMS

STANDARD

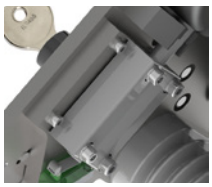
Manually operated units having no lock (key or electromagnet) to lock **SWI(N)** in all three positions are equipped with manual locking lever.

A change-over auxiliary switch indicates the locking status of the lock system.

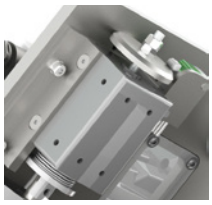
MANUAL LOCKING LEVER
(FOR MANUAL OPERATED DEVICE)

OPTIONAL (SUBJECT OF ADDITIONAL COSTS)

- Key lock system
- Key can only be removed in locked positions. Key lock the moving contact in a defined position (each end posion and middle position).
- Key lock system is of Ronis type. For other type, please contact Sécheron.
- The electromagnet lock the moving contact in a defined position (each end posion and middle position).
- When the electromagnet is energized, the main contact is unlocked and can then be operated.
- A change-over auxiliary switch indicates the locking status of the lock system.
- A change-over auxiliary switch must be implemented in a control circuit for motor SW.



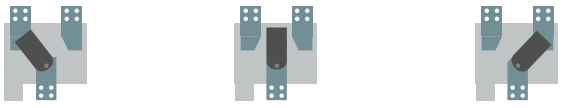
KEY LOCK SYSTEM



ELECTROMAGNET LOCK SYSTEM

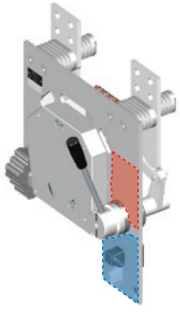
LOCKED POSITION OF MOVIG CONTACT

Closed position 1 | Open position | Closed position 2



Positions of the key lock systems

The key and electromagnet locks systems are located in upper position or lower position on the main plate.



Upper position
second key location

Lower position
If only one key selected.

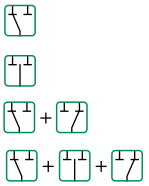
LOCKING SYSTEMS

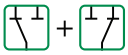
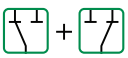
CONFIGURATION TABLE TO SELECT AND CODE THE LOCKING SYSTEM

As a complement to the below table, please note the following rules for your appropriate selection of lock configurations:

- **SWI(N)** with manual operation MUST be locked in all positions (with manual lock or with keylock)
- **SWI(N)** is locked with keylock or electromagnet. It can use one locking type only.

These symbols show in which position the moving contact is locked:



Key lock system	Electromagnet lock system	Designation code	
		standard	option
-	-	0	-
	-	-	A
	-	-	B
	-	-	C
	-	-	K
-		-	N
-		-	M
-		-	I
-		-	L

DESIGNATION CODE FOR ORDERING

- Be sure to establish the designation code from the latest version of our brochure by downloading it from the website: www.secheron.com
- Be careful to write down the complete alphanumerical designation code with 13 characters when placing your order.
- For technical reasons some variants and options indicated in the designation code might not be combined.
- For other configurations not described in the brochure, please contact Secheron.
- The bold characters of the designation code define the device type.

Example of customer's choice:	**SW**	**I**	**18**	**40**	MO	1	J	B	1
Line:	10	11	12	13	14	15	16	17	18

DESIGNATION CODE*

(*) Options are subject to additional costs

Line	Description	Designation	standard	Options	Customer's choice
10	Product type	**SW**	**SW**		**SW**
11	Application	Change-over switch with stop in neutral position	**I(N)**		
12	Rated operational voltage	1,800 V	**18**		
13	Conventional free-air thermal current (1)	2,000 A	**20**		
		4,000 A	**40**		
		6,300 A	**63**		
14	Operation	Manual	MA		
		Electric	MO		
15	Number of pole	1 pole	1		
		2 poles	2		
16	Control voltage for electric operation and optional electromagnet locks				
		(Manual operation and without electromagnet lock) Not applicable	Z		
		24 V_{DC}	A		
		48 V_{DC}	C		
		60/64 V_{DC}	G		
		110 V_{DC}	E		
		125 V_{DC}	R		
		127 V_{AC} - 50/60 Hz	X		
17	Locking of moving contacts (3)	No	Ø		
		One key lock locking closed position 1		A	
		One key lock locking open position		B	
		One key lock locking closed positions 1 and 2		C	
		One key lock locking all positions		K	
		For other selection, refer to the codification table on page 10		...	
18	Cylinder and key delivery	(If no key lock selected in line 17) Not applicable	Z		
		Delivered with random codification	6		
		For specific code, device will be delivered without cylinder and key, these should be ordered to RONIS supplier		1	

Signature:

Name:

Place and date:

Sécheron

Sécheron SA
Rue du Pré-Bouvier 25
1242 Satigny - Geneva
CH-Switzerland

www.secheron.com
Tel: +41 22 739 41 11
Fax: +41 22 739 48 11
ess@secheron.com

SA020609BEN_A00-09.24