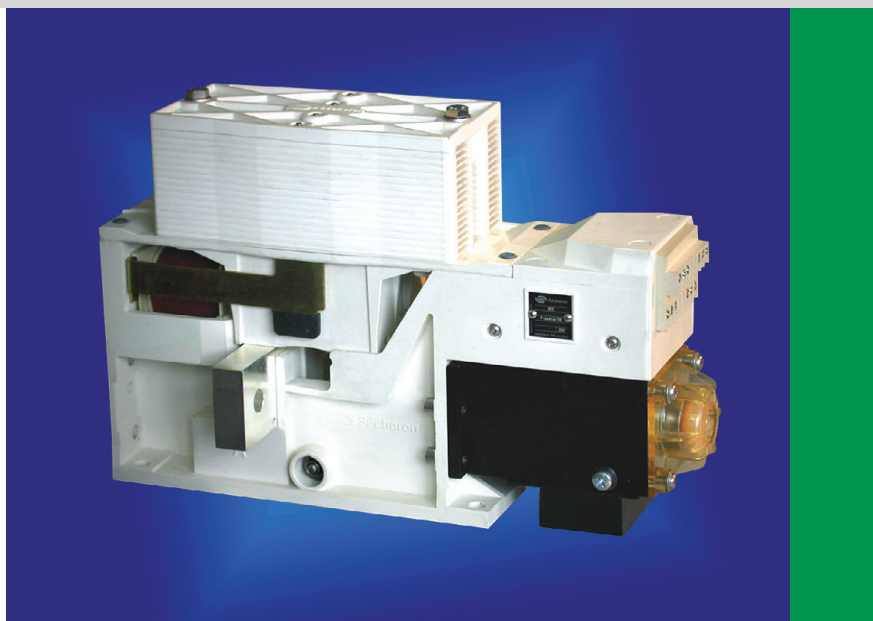


SEC Contactor

SEC 10.10	SEC 09.13
SEC 20.10	SEC 18.13
SEC 40.10	SEC 36.13



The **SEC contactor** has been designed for heavy operational frequencies in order to cover all kinds of applications for electric traction vehicles. It is particularly suitable for propulsion main circuits (line contactor, pre-charging

contactor, main converter isolating contactor) as well as for auxiliary circuits (auxiliary converter isolating contactor, heating contactor), and can be used for both direct (d.c.) and alternative (a.c.) current.

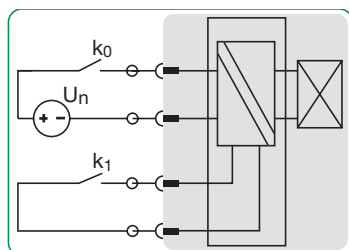
Main features

- Horizontal and vertical mounting
- Small dimensions and weight
- High insulation level
- Operational voltage rated 900 V to 4000 V (DC and AC)
- High electrical endurance
- Rated thermal current up to 1300 A
- Heavy operational frequency category C3; component category A2
- High overvoltage category OV3
- High resistance to pollution (degree PD3)
- Double break silver contact allowing a longer life time
- Efficient blow-out circuit avoids critical zone for low currents and ensures stable interruption time
- Reduced power consumption using a coil controller, compensating the thermal variation effects and controlling of the closing and opening speed independently of the control voltage circuit
- Several control modes allowed by the coil controller
- Easy and low maintenance requirements: removal of arc chute with minimal required clearance distances and easy replacement of main contacts
- 2a + 2b auxiliary contacts; option up to 3a + 3b
- Complies to IEC60077-1, IEC60077-2, IEC61373 (category 1 class B), EN50121-1, EN50121-2, EN50121-3
- CE marking
- Use of high performing non-metallic materials compliant to the most severe standards in terms of flame resistance, oxygen index and smoke emission

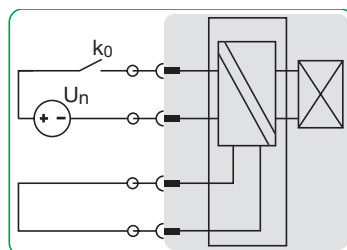
Control modes

Two different modes can be used to control the SEC coil controller.

Indirect mode

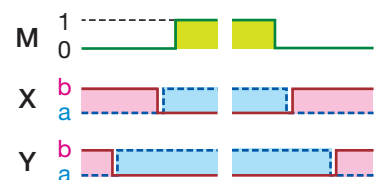


Direct mode



■ Sécheron's supply

Auxiliary contacts configuration



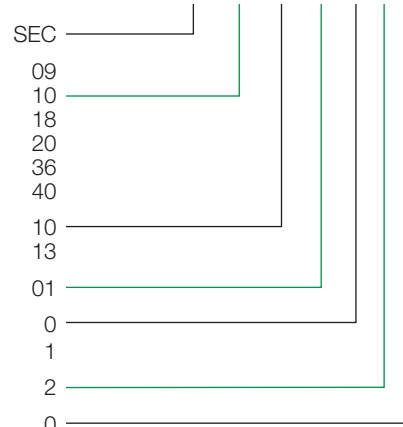
- M. Main contact
- X. Standard switching of auxiliary contacts (a+b)
- Y. Early switching of auxiliary contacts (a+b) at the contactor closing

Designation code (standard version)

Type designation

Contactor type	SEC	SEC
Rated voltage	900 V	09
	1000 V	10
	1800 V	18
	2000 V	20
	3600 V	36
	4000 V	40
Rated current	1000 A	10
	1300 A	13
Connections	Lateral	01
Nominal control voltage	24 - 36 Vdc	0
	48 - 110 Vdc	1
Auxiliary contacts	Silver contacts 1X + 1Y	2
LV interface	Terminal connection	0

SEC 10 10 01 0 2 0



Technical data

Symbol Unit SEC10.10 SEC20.10 SEC40.10 SEC09.13 SEC18.13 SEC36.13

MAIN CIRCUIT

Rated operational voltage	U _e	[Vdc] [Vac] ⁽¹⁾	1000	2000	4000	900	1800	3600
Rated insulating voltage	U _i	[V]	2000	2000	4000	2000	2000	4000
Rated operational current ⁽²⁾	I _e	[A]	1000	1000	1000	1300	1300	1300
Conventional free air thermal current	I _{th}	[A]	1000	1000	1000	1300	1300	1300
Rated breaking capacity with $\tau = 15$ ms		[A]	4000	3000	2500	2500	2000	2000
Breaking overvoltage	\hat{U}_c	[V]	≤ 2000	≤ 3500	≤ 7000	≤ 2000	≤ 3500	≤ 7000
Critical current	I _{cr}	[A]	no critical current					

(1) $16^{2/3}$, 50, 60 [Hz]

(2) Operational frequency C3

CONTROL CIRCUIT

Nominal voltage	U _n	[Vdc]	24 - 36 / 48 - 110					
Nominal pull-in power / duration	P _c	[W]/[s]	80 - 120 / 0.6					
Nominal hold power	P _c	[W]	<6					

AUXILIARY CONTACTS CIRCUIT

Rated voltage	[Vdc]	24 to 110						
Rated current	[A]	10						
Maximum breaking current	[A]	1						
	- Ohmic load at 110 Vdc	[A]	0.3					
	- Inductive load $\tau = 15$ ms at 110 Vdc	[A]	10					
Minimum let-through current at 24 Vdc ⁽³⁾	[mA]	10						
	[mA]	4 in option						

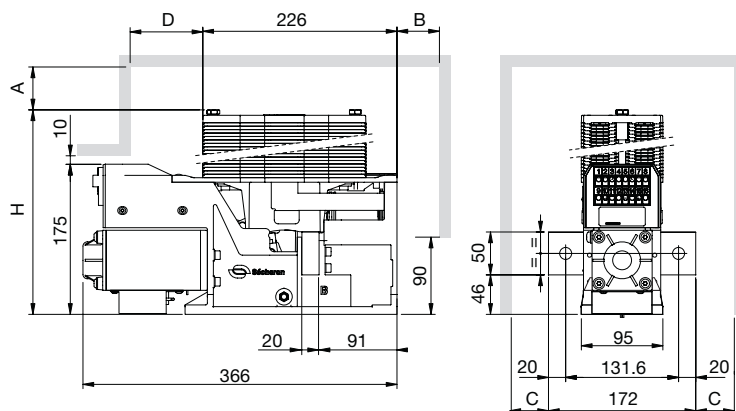
(3) For dry and clean environment

OPERATING CONDITIONS

Ambient temperature	T _{amb}	[°C]	-40 to +70					
Minimum Mechanical durability	N	operations	2.10 ⁶					
Dielectric test voltage (50 Hz, 1 min)	U ₅₀	[kV]	4.7	4.7	7.9	4.7	4.7	7.9
	- Across main contacts (open)	[kV]	6	6	10	6	6	10
	- Main circuit (closed) to earth	[kV]						
	- LV circuit against earth	[kV]			1.5			

Main Dimensions

Lateral connections



	SEC 10.10 SEC 09.13	SEC 20.10 SEC 18.13	SEC 40.10 SEC 36.13
A	30* / 50**	30* / 50**	30* / 50**
B***	50* / 100**	50* / 100**	100* / 200**
C	20* / 30**	30* / 50**	50* / 80**
D	50* / 100**	50* / 100**	100* / 200**
H	239	275	375
Weight	11 kg	12.5 kg	16 kg

* Clearance against insulating wall

** Clearance against earth

*** For breaking current $\leq 2\text{kA}$ ($\leq 1\text{kA}$ for SEC 40.10 and SEC 36.13)

All dimensions are in [mm]

Options (subject to additional costs)

Type designation

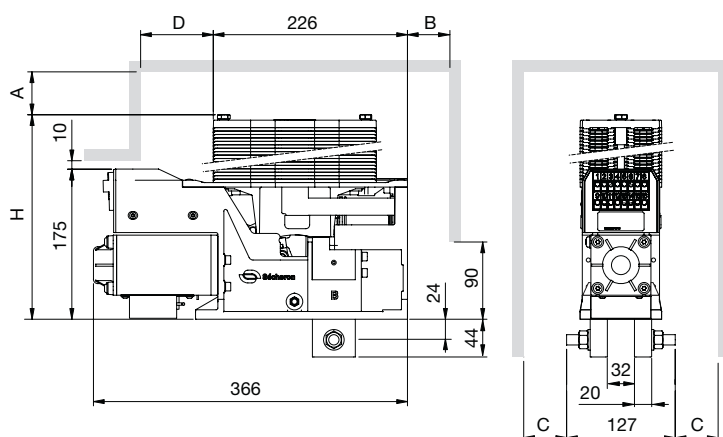
Connections	Bottom with screws M12x40	02
Auxiliary contacts	Silver contacts 2X	1
	Silver contacts 2X + 1Y	3
	Golden contacts ⁽¹⁾ 2X	4
	Golden contacts ⁽¹⁾ 2X + 1Y	5
LV interface	AMP 18 pin connector ⁽²⁾	1

SEC 10 10 02 0 1 1

(1) For minimum let-through current lower than 10 mA

(2) Fixed part only, the mobile connector must be ordered separately

Bottom connections



	SEC 10.10 SEC 09.13	SEC 20.10 SEC 18.13	SEC 40.10 SEC 36.13
A	30* / 50**	30* / 50**	30* / 50**
B***	50* / 100**	50* / 100**	100* / 200**
C	20* / 30**	30* / 50**	50* / 80**
D	50* / 100**	50* / 100**	100* / 200**
H	239	275	375
Weight	12 kg	13.5 kg	17 kg

* Clearance against insulating wall

** Clearance against earth

*** For breaking current $\leq 2\text{kA}$ ($\leq 1\text{kA}$ for SEC 40.10 and SEC 36.13)

All dimensions are in [mm]