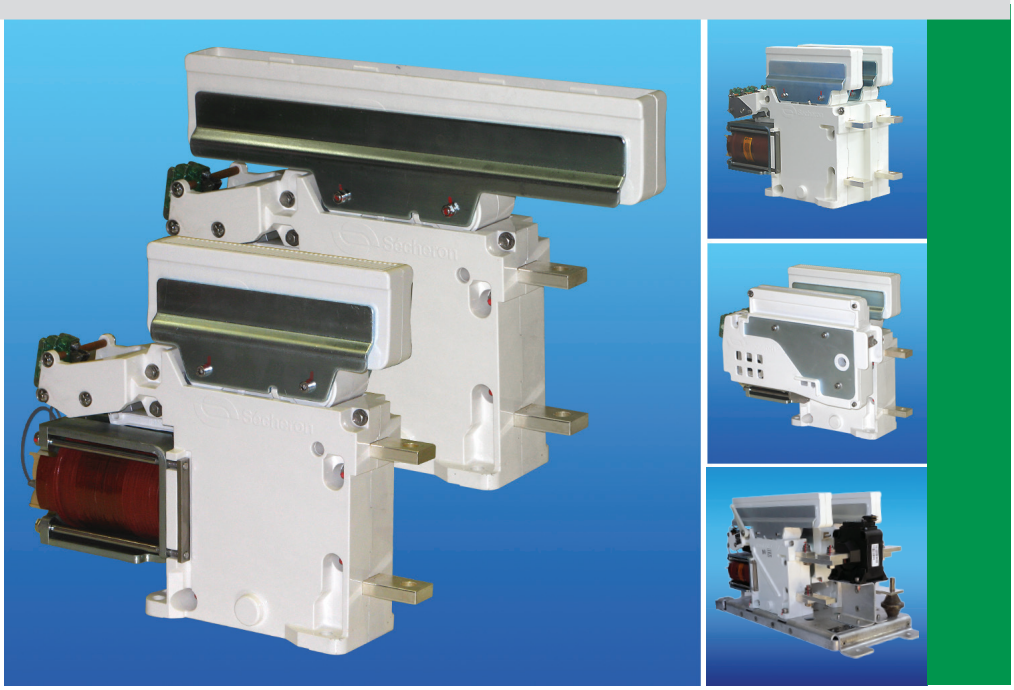
COMPONENTS

Power contactor
Type **BMS09.08 / BMS18.08**



Sécheron

General information

The **BMS** contactor, with more than hundred thousands units in operation worldwide, has always been a contactor valued by the car builders and operators of electric traction vehicles for its strong performance level and its extremely high reliability.

Taking advantages of its recognized features and design, Sécheron has modernized the **BMS** to make a product platform particularly well adapted to actual requirements and standards. With its high modularity, the **BMS** offers variants and options that enable our customers to find the most appropriate version to fit their application, either as a stand-alone contactor, or delivered coupled with a Sécheron dedicated **pre-charging contactor type PCC18**. Power contactor modules convenient to order and easy to install are a frequent wish of our customers. Sécheron brings the best solution with "plug & play" units gathering line and pre-charging contactors, but also current measurement and customised high voltage and low voltage interfaces.

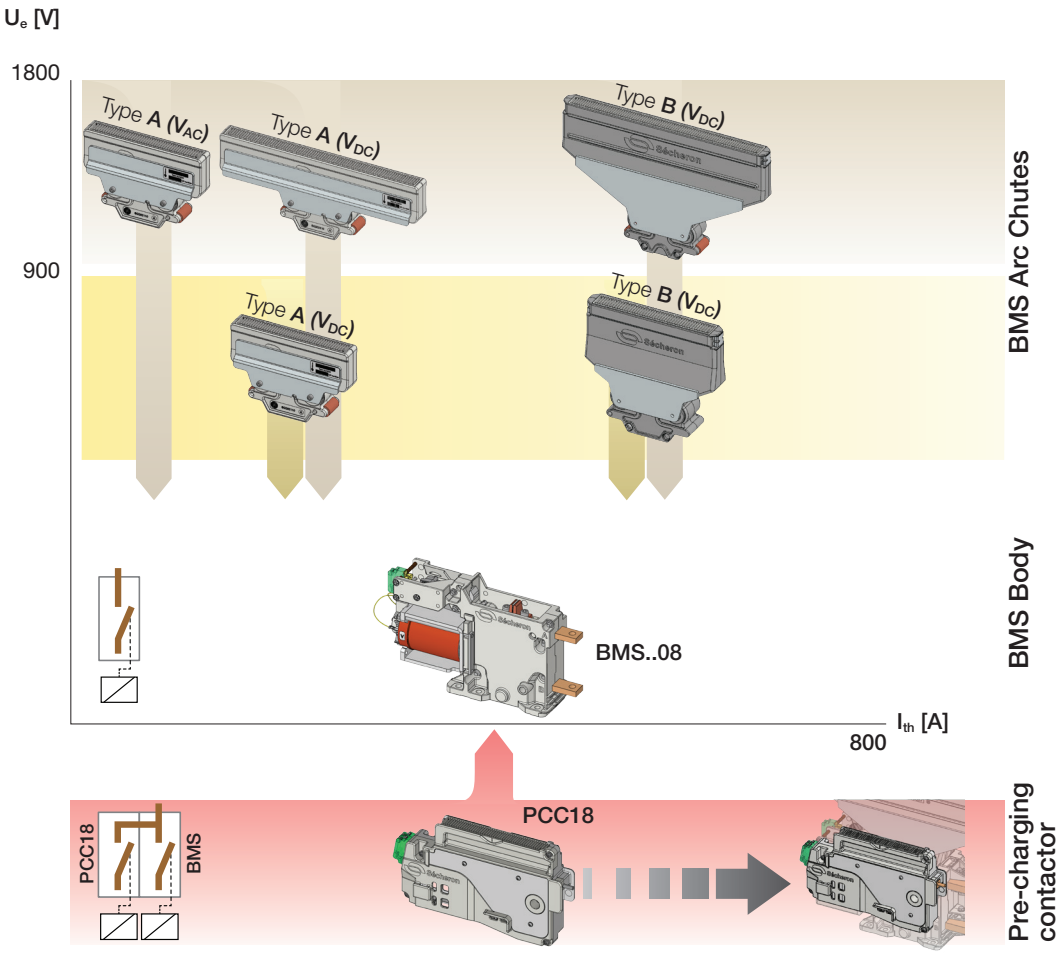
Applications

- Line contactors, assembled set of line and pre-charging contactors, main traction converter isolating contactor, 3-phase synchronous motor isolating contactor and other applications for locomotives, trains, EMUs, tramways / light rail vehicles
- Contactors for fixed installations including DC power traction substations and other industrial fields

Main features

- Rated operation voltage 900 V_{DC} or 1800 $V_{DC/AC}$
- Conventional free air thermal current up to 800 A
- Normally open and bi-directional contactor
- One, two or three pole (either mechanically synchronised or independent)
- Heavy duty class for mechanical operations with a minimum of 2 millions operations
- Different designs of arc chutes matching installation space and operational performance requirements
- Deliverable as a single unit with the Secheron's pre-charging contactor PCC18, current measurement, high/low voltage connections
- Delivered in standard with control coil low voltage protection against surges
- Low maintenance requirements with easy access to the main contacts for replacement
- Very compact size and extremely low weight
- Suitable for ambient temperature from -40°C to +70°C
- Reference standards: IEC60077-1 /-2, IEC61373, NF-F16 101 /-102

Contactor configurations



Data for product selection

	Symbol	Unit	BMS09.08A	BMS09.08B	BMS18.08A	BMS18.08B	PCC18
MAIN HIGH VOLTAGE CIRCUIT							
Rated operational voltage (16.7, 25, 50/60, ...400 Hz)	U_e	[V_{DC}] [V_{AC}]	900 1800	900 -	1800 -		1800 1800
Rated insulation voltage	U_i	[V_{DC}] [V_{AC}]	2300 2300	2300 -	2300 -		2300 2300
Conventional free air thermal current (1)	I_{th}	[A]	800		800		N.A.
Rated operational current	I_e	[A]	500 / 800	800	500 / 800	800	N.A.
Operational frequency			C2 / C1	C2	C2 / C1	C2	N.A.
Rated short-time withstand current	$I_{cw\,/\,t}$	[kA]/[ms]	10 / 100		10 / 100		N.A.
Peak short-time withstand current	$\hat{I}_{cw}$	[kA]	10		10		N.A.
Maximum breaking capacity - DC current, τ = 15 ms - AC current, cos Φ = 0.8 (16.7, 25 & 50/60 Hz)	I_{bc} I_{bc}	[A] [A_{rms}]	3200 4200	6000 4200	2300 -	6000 -	40 100 (2)
Maximum making capacity - DC current, τ = 15 ms - AC current, cos Φ = 0.8 (16.7, 25 & 50/60 Hz)	I_{mc} I_{mc}	[A] [A_{peak}]	6000 6000		6000 6000		100 200
Rated power-frequency withstand voltage (3) - Between main contacts (open) - Main circuit (closed) to earth	 U_{50} U_{50}	 [kV_{rms}] [kV_{rms}]	 7.5 9.5		 7.5 9.5		 7.5 9.5

(1) At T_{amb} = +40°C and tested with high voltage connections with current density 1.7A/mm², for DC and AC voltage up to 60 Hz. For higher frequency, please contact Sécheron.
(2) For higher value, contact Sécheron.
(3) At 50 Hz and during 1 minute.

LOW VOLTAGE CIRCUIT

Control circuit

Nominal voltage				
- 1 pole horizontal	U_n	[V_{DC}]	24, 32, 36, 48, 72, 84, 110, 220	24,...220
- 1 pole vertical	U_n / U_{EF} (4)	[V_{DC}]	[24 - 36], [48 - 110] / [24 - 110]	24,...220
- 2-poles synchronised	U_n / U_{EF} (4)	[V_{DC}]	[48 - 110] / [24 - 110]	N.A. (5)
- 3-poles synchronised	U_n / U_{EF} (4)	[V_{DC}]	[72 - 110] / [24 - 110]	N.A. (5)
Range of voltage			[0.7 - 1.25] U_n	[0.7 - 1.25] U_n
Nominal closing power (6) (7)				
- 1 pole horizontal	P_c	[W]	≤ 37	<40
- 1 pole vertical	P_c	[W]	≤ 60	<40
- 2-poles synchronised	P_c	[W]	≤ 100	N.A. (5)
- 3-poles synchronised	P_c	[W]	≤ 350	N.A. (5)
Nominal holding power (6)				
- 1 pole horizontal	P_h	[W]	≤ 37	-
- 1 pole vertical	P_h	[W]	≤ 4	-
- 2-poles synchronised	P_h	[W]	≤ 6	-
- 3-poles synchronised	P_h	[W]	≤ 8	-

(4) For U_{EF} definition refer to page 6.
(5) N.A. : Not Available.
(6) At U_n and T_{amb} = +20°C.
(7) For a maximum time of 500 ms for BMS and 10 s for PCC.

Auxiliary contacts

Type of contacts			Potential free (PF)
Rated voltage		[V_{DC}]	24 to 220
Conventional thermal current	I_{th}	[A]	10
Switching categories according to EN60947	- AC-15 - DC-13		230 V_{AC} 1.0 A 110 V_{DC} 0.5 A
Minimum let-through current at 24 V_{DC} (8)		[mA]	≥ 10 (silver contacts) or 4 ≤ I < 10 (gold contacts)

(8) For a dry and clean environment.

Low voltage interface

Control circuits	Direct on coil (screw) or Wago terminal
Auxiliary switches	Direct on switches

Insulation

Rated power-frequency withstand voltage (9) - LV circuit to earth	 U_{50}	 [kV_{rms}]	 1.5	 1.5

(9) At 50 Hz and during 1 minute.

OPERATING CONDITIONS

Installation			Indoors	
Altitude		[m]	<1'400	
Working ambient temperature	T_{amb}	[°C]	-40 to +70	
Humidity			95% at +40°C	
Pollution degree			PD3A	PD3
Minimum mechanical durability	N	Cycles	2'000'000	2'000'000

Information for product integration

Main dimensions

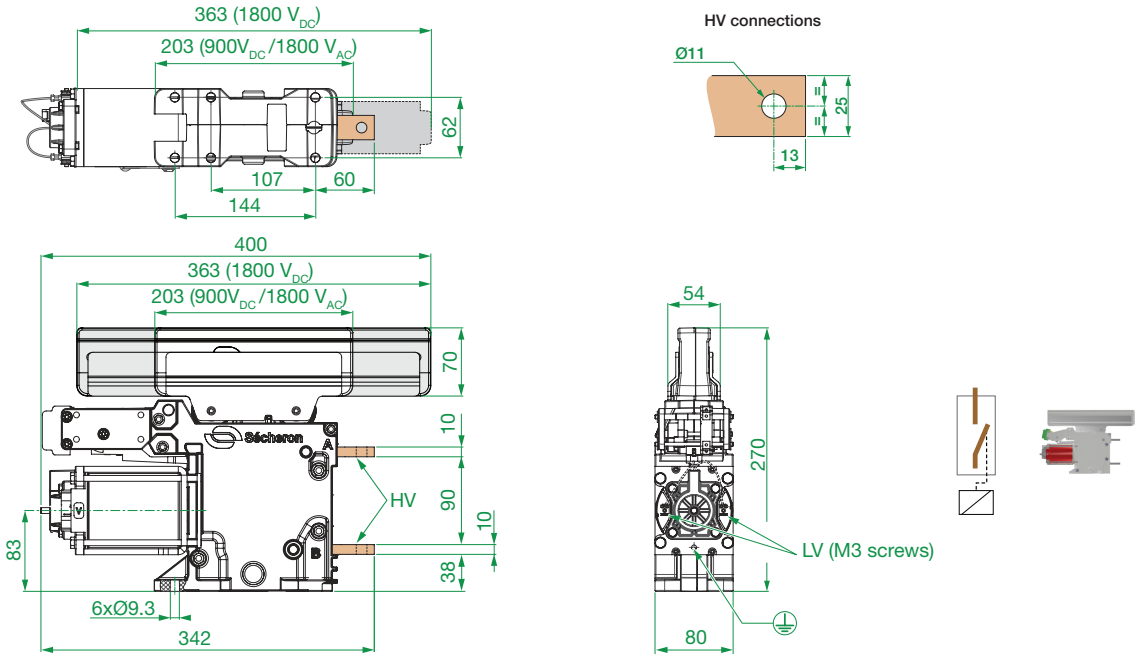
Dimensions without tolerances are indicative. All dimensions are in mm. The maximum allowed flatness deviation of the support frame is 0.5 mm.

HV connections (BMS..08) : M10 screws
LV connections (BMS control) : M3 screws
or Wago terminal

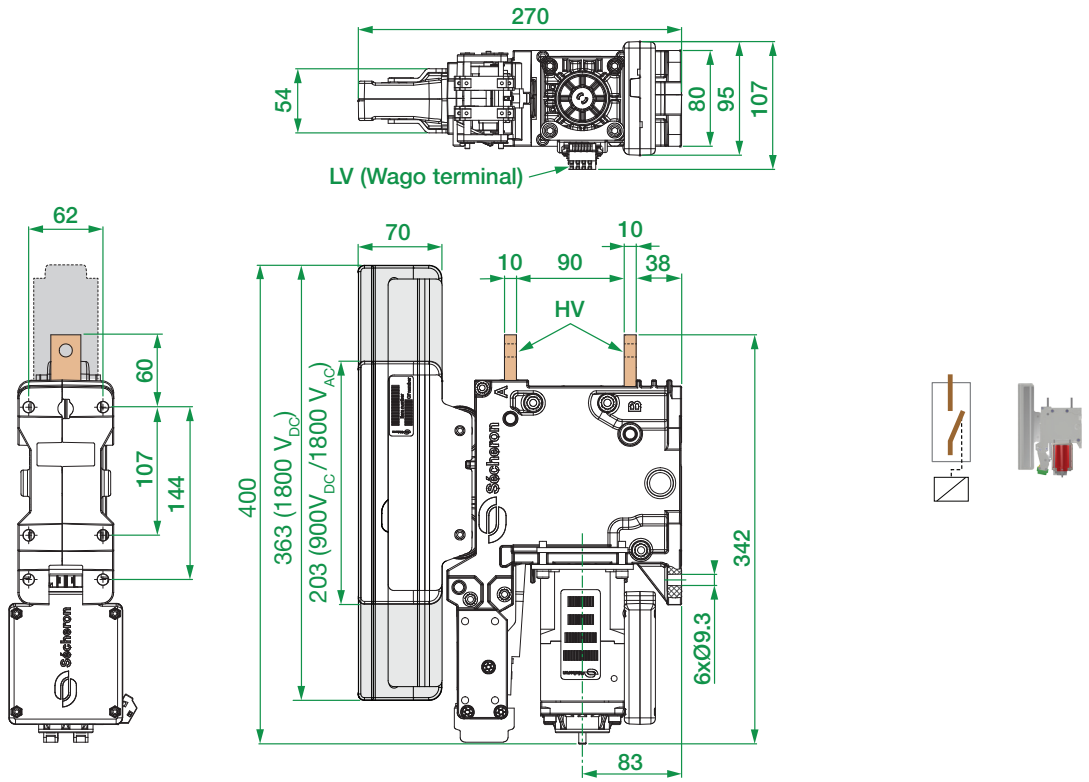
LV connections (BMS auxiliary switches) : M3 screws
Earth connections : M6 screws

BMS09.08A / BMS18.08A - 1 pole

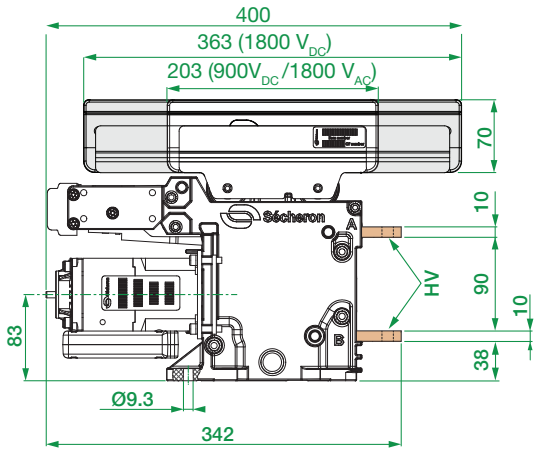
Horizontal mounting version

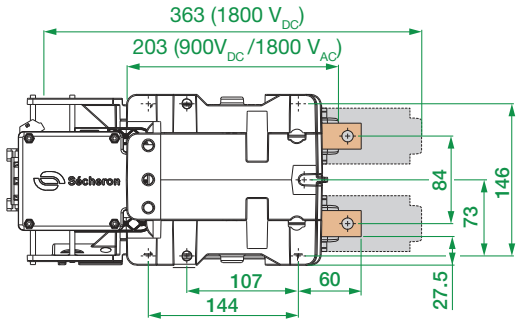


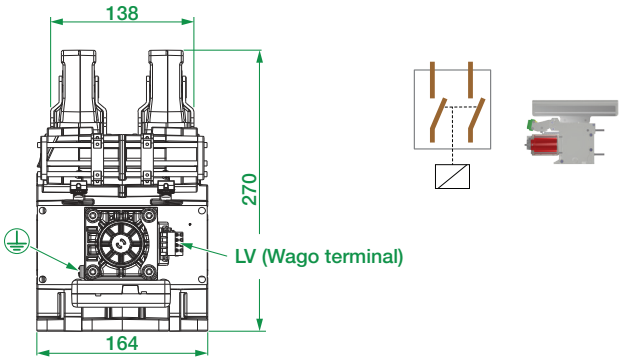
Vertical mounting version

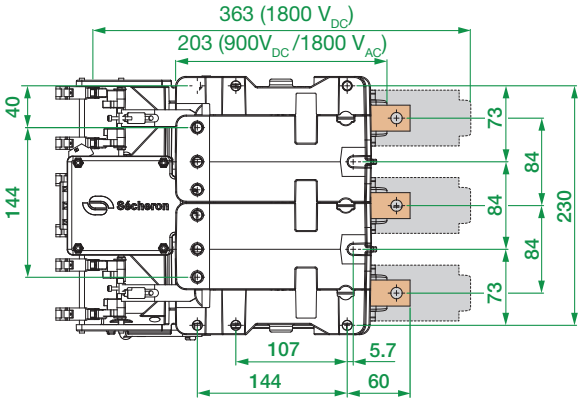


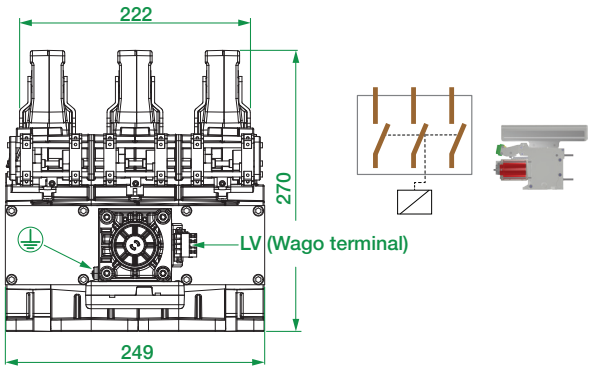
BMS09.08A / BMS18.08A - 2 and 3 poles





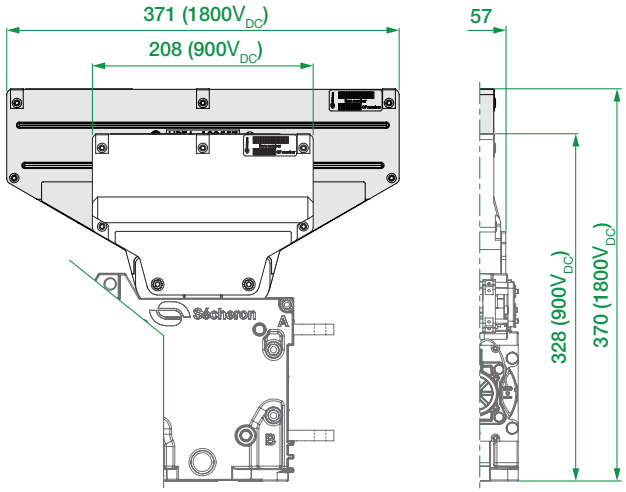






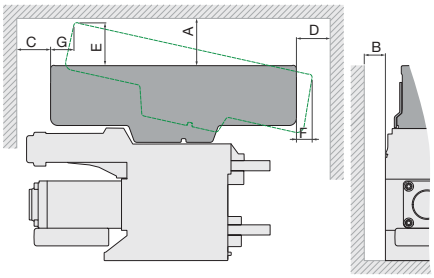
Dimension are valid for synchronised pole. For independent pole, please contact Sécheron.

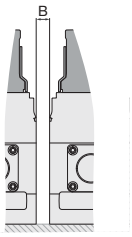
BMS09.08B / BMS18.08B



The dimensions indicated for all versions of contactors with arc chute type A (refer to page 4) are available for contactors equiped with arc chute type B, except for the dimensions shown on the present drawing.

Insulation distances and Weights

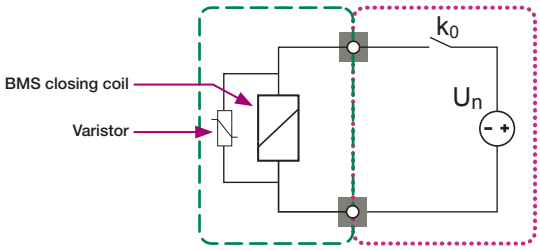




	Isulating distances table [mm]								Arc chute removal distance [mm]			Weight: ± 0.5 kg		
	With earthed wall				With insulating wall									
	A	B	C	D	A	B	C	D	E	F	G	1-pole	2-pole	3-pole
BMS09.08A	75	10	75	75	40	10	40	40	70	30	35	9.0	15.0	21.0
BMS18.08A	75	10	75	75	40	10	40	40	90	20	40	10.0	17.0	24.0
BMS09.08B	40	10	40	40	20	10	20	20	70	45	50	10.0	17.0	24.0
BMS18.08B	40	10	40	40	20	10	20	20	80	20	80	12.0	21.0	30.0

Low voltage control diagram for BMS

Diagram 1



Applicable for the following BMS configuration:

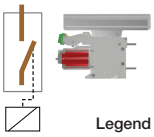
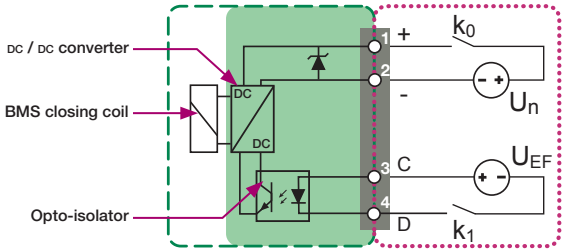
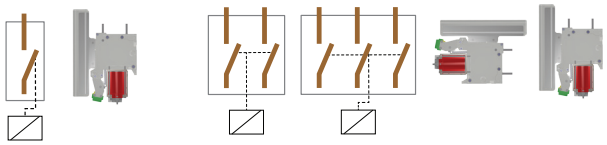


Diagram 2



Applicable for the following BMS configurations:



Legend

: Sécheron's scope
: Customer's scope
: Low voltage interface
: Coil controller

U_n : DC power supply
U_{EF} : Control voltage [1]
k_0 : Supply relay
k_1 : Control relay

[1] Control voltage (U_{EF}) can be different from supply voltage (U_n).

Options (subject to additional costs)

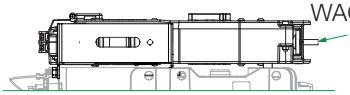
Integrated pre-charing contactor (PCC18)

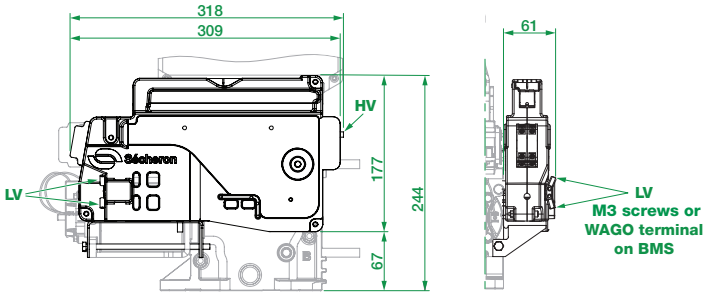
Main dimensions

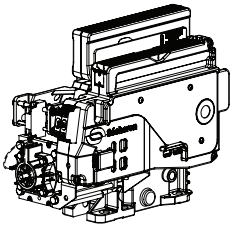
All dimensions are in mm. The maximum allowed flatness deviation of the support frame is 0.5 mm.

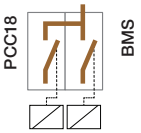
HV connections (PCC18) : M6 screw
LV connections (PCC18's coil): M3 screws or WAGO terminals

LV connections (PCC18 auxiliary switches): M3 screws
Earth connection : Through the BMS









Additional weight: 3 kg

The drawings hereabove represent the PCC18 when mounted on any BMS..08 versions. The other dimensions of the BMS..08 indicated on page 4 and 5 remain valid. **Note!** Also available for multipole BMS.

Control diagram

Diagram 1

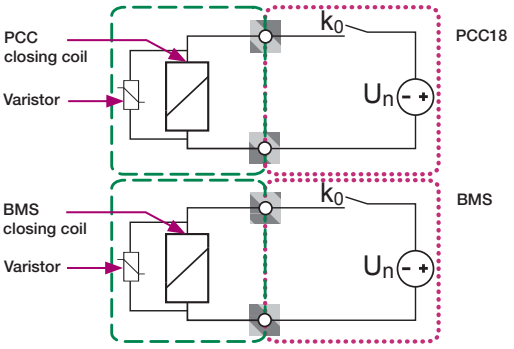
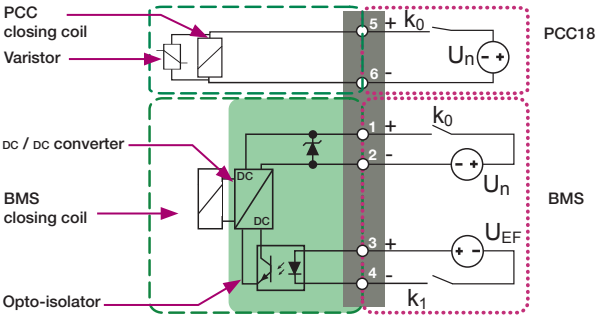
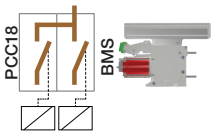


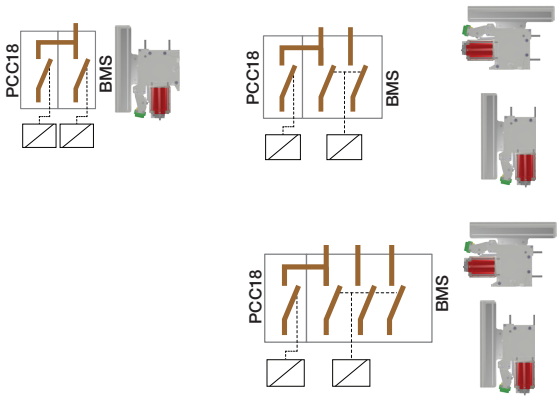
Diagram 2



Applicable for the following BMS configurations:



Applicable for the following BMS configurations:



Legend

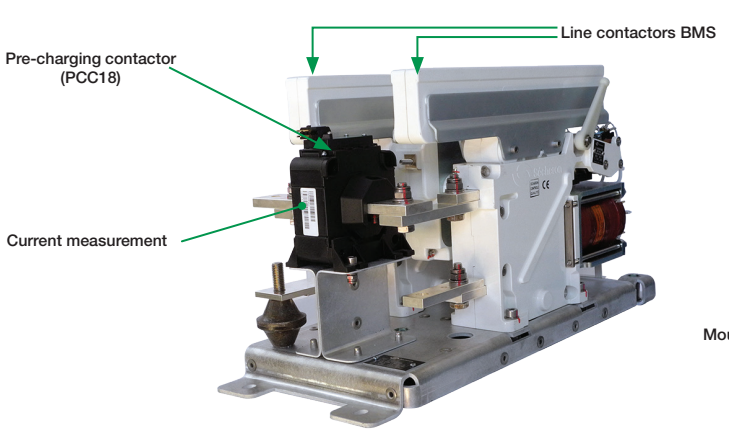
- : Sécheron's scope
- : Customer's scope
- : Low voltage screw terminals
- : Low voltage WAGO terminals
- : Coil controller

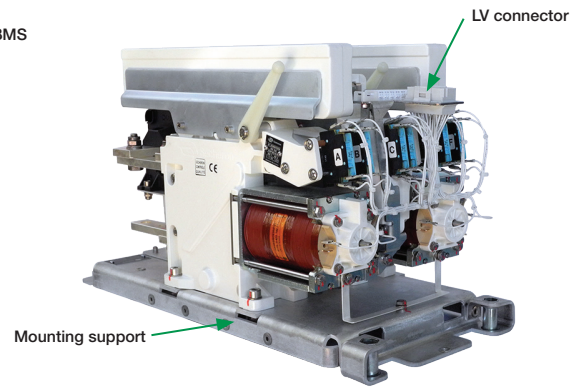
U_n : DC power supply
U_{EF} : Control voltage [1]
k_0 : Supply relay
k_1 : Control relay

[1] Control voltage (U_{EF}) can be different from supply voltage (U_n).

Power contactor module

On project base, Secheron designs and delivers complete **Power Contactor Modules** integrating **BMS** and **PCC** contactors, but also current measurement and other components necessary to fulfill the application. All the components are delivered mounted on a support, with implemented high voltage connections between components, and a single low voltage interface. This module offers the car builder simple and easy interfaces, but also simplifies its life in terms of development, logistic and installation.





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 17 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

Example of customer's choice:	**BMS**	**18**	**08**	A	1	Z	0	E	A	Z	H	D	S
Line:	10	11	12	13	14	15	16	17	18	19	20	21	22

The bold characters of the designation code define the device type.

Designation code (options are subject to additional costs) - Order form

Line	Description	Designation	Standard	Options	Customer's choice
10	Product type	BMS	BMS		BMS
11	Rated operational voltage	900 V_{DC} or 1800 V_{AC}	09		
		1800 V_{DC}	18		
12	Rated conventional free air thermal current [1]	800 A	08		08
13	Arc chute type	Type A	A		
		Type B		B	
14	Number of pole	1-pole	1		
		2-pole	2		
		3-pole	3		
15	Poles mechanical synchronization	(1-pole) Not applicable	Z		
		Synchronized	S		
		Independent		I	
16	Integration of Pre-Charging Contactor PCC18	No	0		
		Yes		C	
17	Control voltage	24 V_{DC}	A		
		32 V_{DC}		F	
		36 V_{DC}	B		
		48 V_{DC}	C		
		72 V_{DC}	D		
		84 V_{DC}		H	
		110 V_{DC}	E		
		220 V_{DC}		J	
18	Auxiliary contacts BMS (per pole)	1a + 1b - (switch PF) - silver type	A		
		1a + 1b - (switch PF) - gold type		C	
		2a + 2b - (switch PF) - silver type		E	
		2a + 2b - (switch PF) - gold type		H	
		3a + 3b - (switch PF) - silver type		K	
		3a + 3b - (switch PF) - gold type		M	
		4a + 4b - (switch PF) - silver type		O	
		4a + 4b - (switch PF) - gold type		P	
19	Auxiliary contacts (PCC18)	(No PCC18) Not applicable	Z		
		1a + 1b - (switch PF) - silver type	1		
		1a + 1b - (switch PF) - gold type		2	
		2a + 2b - (switch PF) - silver type		3	
		2a + 2b - (switch PF) - gold type		4	
20	Installation	Horizontal	H		
		Vertical		V	
21	Application type	(Direct Current) DC	D		
		(Alternating Current) AC		A	
22	Opening BMS arc chute	Standard	S		
		Arc chute lever		A	

Some combinations may not be possible, therefore validate your configuration with Sécheron before ordering.

Place and date:	Name:	Signature:

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